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Valentine Tank

David Doyle

Walk Around®

Don Greer 2010

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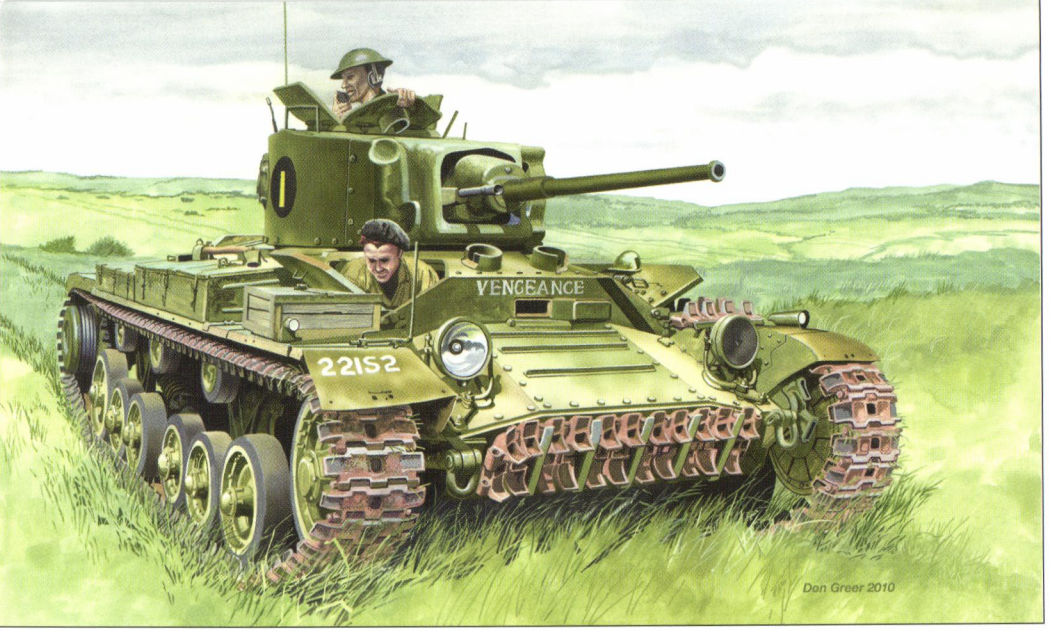

(Front Cover) A driver is entering or dismounting his Valentine III, named Vengeance. On the side of the turret is the tactical sign, the number 1 inside a circle, signifying a vehicle from the 1st Troop, C Squadron.

(Back Cover) A British Valentine II of the A Squadron, 50th Battalion, 23rd Armoured Brigade advances somewhere in North Africa. The vehicle is painted in a two-color camouflage scheme of light stone with a contrasting brown or green. The unit symbol on the front of the lower hull is a Liver Bird, a nod to the unit's having been raised in Liverpool. The "67" in the red square is the unit code sign for the 50th Battalion Royal Tank Regiment. The triangle on the turret side identifies tank as part of 'A' Squadron, and the number contained therein is the troop assignment.

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(Title Page) The National Museum of Americans in Wartime has in its collection this Valentine Mk. III. On the right side of the lower front hull plate is the emblem of the 23rd Armoured Brigade; the formation sign is on the opposite side.

Acknowledgments

All photos by the author unless otherwise stated.

This book would not have been possible without the generous assistance of Allan Cors and Marc Sehring at The National Museum of Americans in Wartime; Tom Kailbourn; David Fletcher; Joe DeMarco; Don Moriarty; Scott Taylor; Andrew Willis; Dennis Trowbridge; Simon Thomson; and John Blackman. Special thanks to my wife Denise – who gave unending encouragement as I worked on this volume.

Introduction

The Valentine Infantry Tank III was, as the name indicates, the third of Great Britain's Infantry Tank designs. The Valentine was preceded by the Infantry Tank I, the A11, and the Infantry Tank II, the A12 Matilda I. These "A" designations are the General Staff Specifications. The Valentine, being a private venture design by Vickers-Armstrong, has no corresponding A designation.

The Infantry Tank III Valentine has the distinction of being the wartime British tank with the highest production number – and also arguably the most variations. No fewer than 11 major variations of the tank were produced (each given its own "Mark" designation, resulting in such bewildering designations as Infantry Tank III, Mark IV) along with assorted specialist versions such as the Duplex Drive version seen at the rear of this book, in addition to the Archer and Bishop self-propelled guns.

Reaching a total production of 8,275 units required the efforts of not only the developing firm Vickers-Armstrong Ltd, but also Metropolitan Cammell Carriage and Wagon Company (MCCW) and the Birmingham Railway Carriage and Wagon Company (BRC&W) in Britain, and the Canadian Pacific Railway's Montreal Shops in Canada.

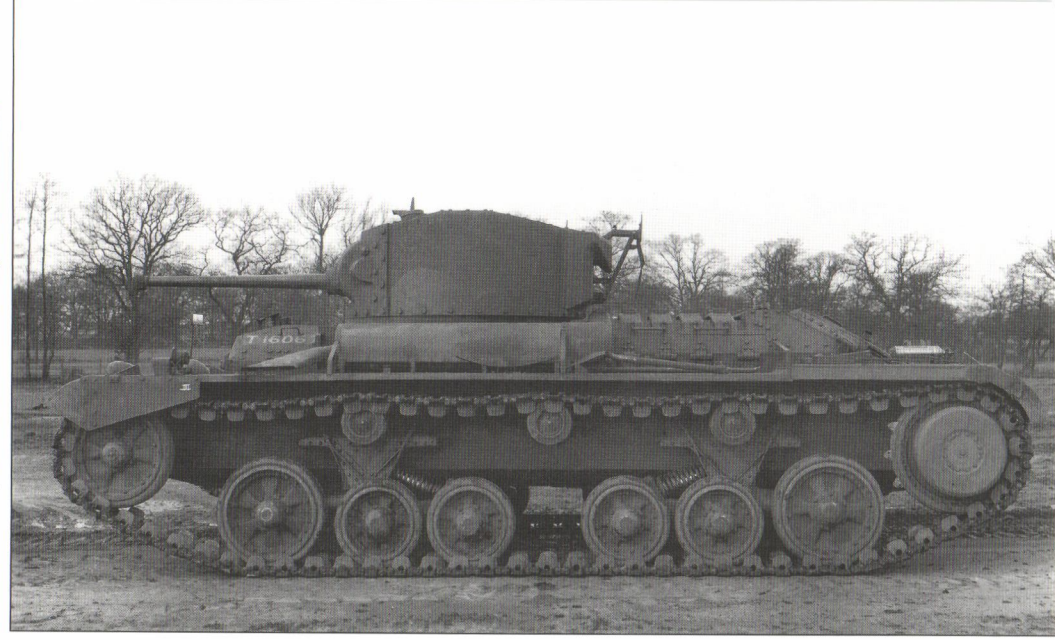
Three different powerplants were used during the April 1940 through April 1944 production run of the tank. The first was an A.E.C. A189 gasoline engine developing 135 horsepower. This was used only in the Mark I. An A.E.C. A190 Diesel engine was used to power the Mk II, MK III, and Mk VIII. The remainder of the Valentine Marks were powered by a General Motors 6-71 6004 Diesel engine.

Besides the powerplant, the most notable differences among the various Marks tend to involve the turret. The Valentine was initially fitted with a small, relatively well-protected two-man turret housing a 2-pounder gun. With the Mark III, this turret gave way to an elongated turret accommodating three men, yet retaining the 2-pounder. This elongated turret was also used on the Mark V. The Mark VIII through Mark XI continued to use the larger turret, but the increased size of the main weapon necessitated the reduction of the turret crew to two yet again.

The Valentine saw service under the colors of Great Britain, Canada (where the Mark VI and VII were produced), the Soviet Union, Australia, and New Zealand. The first combat use of the Valentine was with the British 8th Army in North Africa during Operation Crusader in in November-December 1941. From that point until late 1943 the Valentine would serve as Britain's primary Infantry Tank. Although obsolete by the later stages of the war, its abundance was cause for the Valentine to be the basis of several conversions. In addition to the previously mentioned Duplex Drive tanks, some Valentines were outfitted as mine-exploding Scorpion "flail" tanks, while still others became bridgelayers.

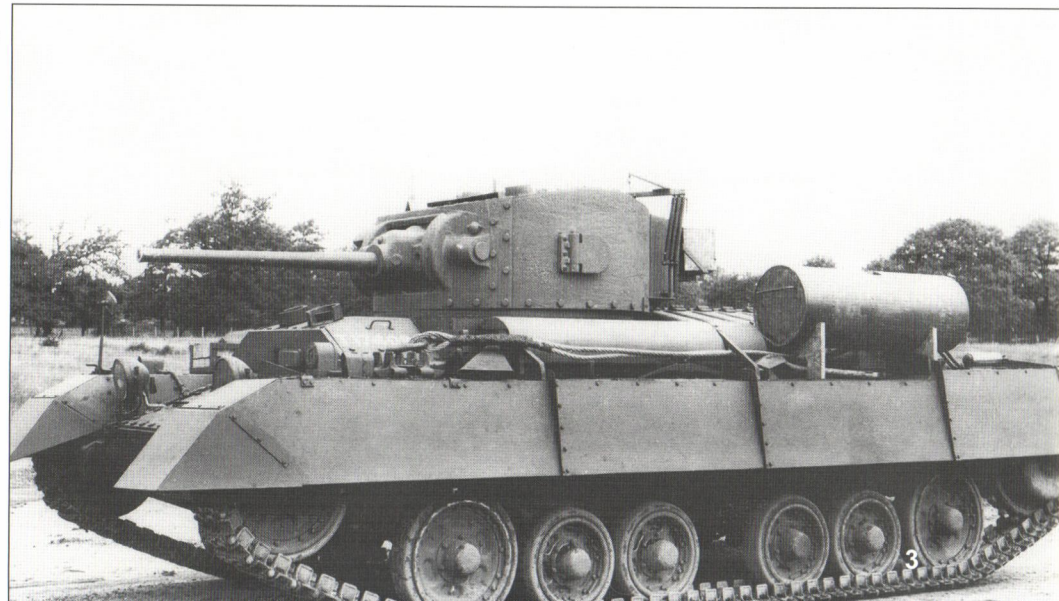
The last Valentines to be used as gun tanks by British forces in Europe were the 75mm-armed Mark XI variants, which served as Battery Commander's vehicles for Commonwealth Self-Propelled Antitank regiments until the German surrender. In the Pacific, New Zealand utilized its Valentines in a combat role through the end of the war.

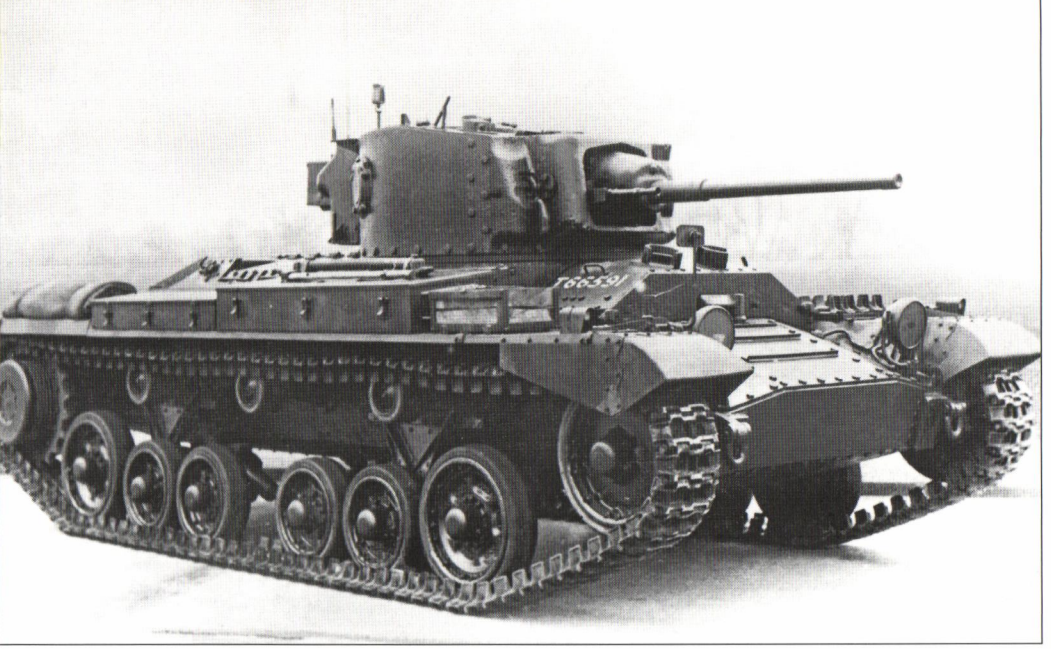
The Valentine soldiered on in the armies of many Commonwealth nations well beyond its prime, serving in the New Zealand military well into the 1950s.



Valentine I, War Department number T16067, is one of 175 Mk. I tanks manufactured by Vickers at Newcastle, England. Noteworthy features included the solid-spoked wheels, the two-man turret with 2-pounder main gun, the folding antenna mount on the turret bustle, and the distinctive, hook-like profile of the protrusion toward the top rear of the bustle. There is a fire extinguisher on the rear fender and no guard over the siren on the front fender. (Patton Museum)

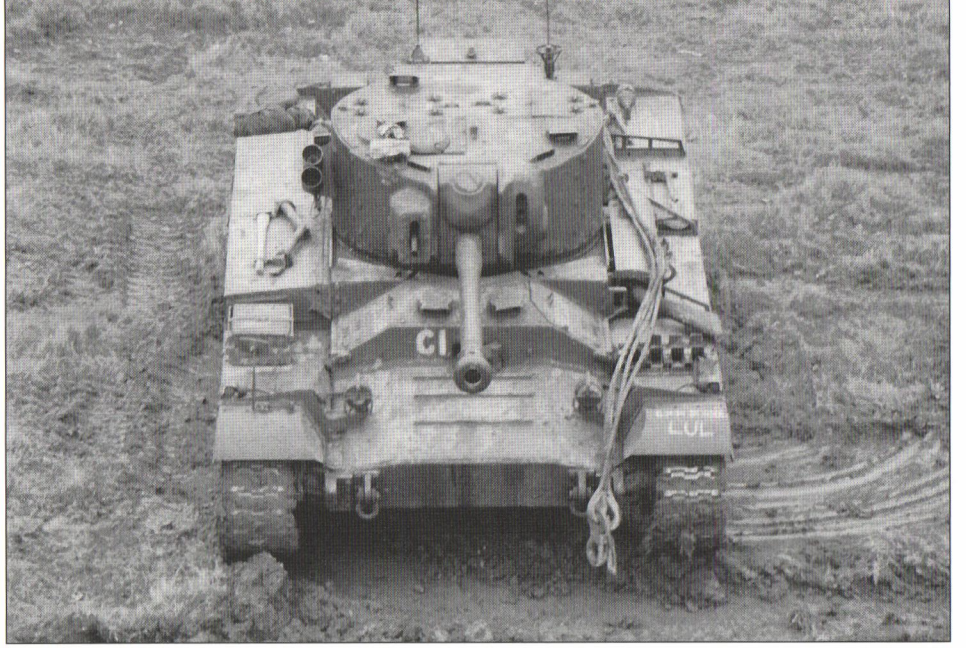
The Valentine II is similar to the Mk. I, but has a Diesel engine. This example is fitted out for desert service, with a jettisonable auxiliary fuel tank and sand shields. The pistol port is a front-hinged design. Several pistol port designs appeared during the life of the Valentine series. (Patton Museum)





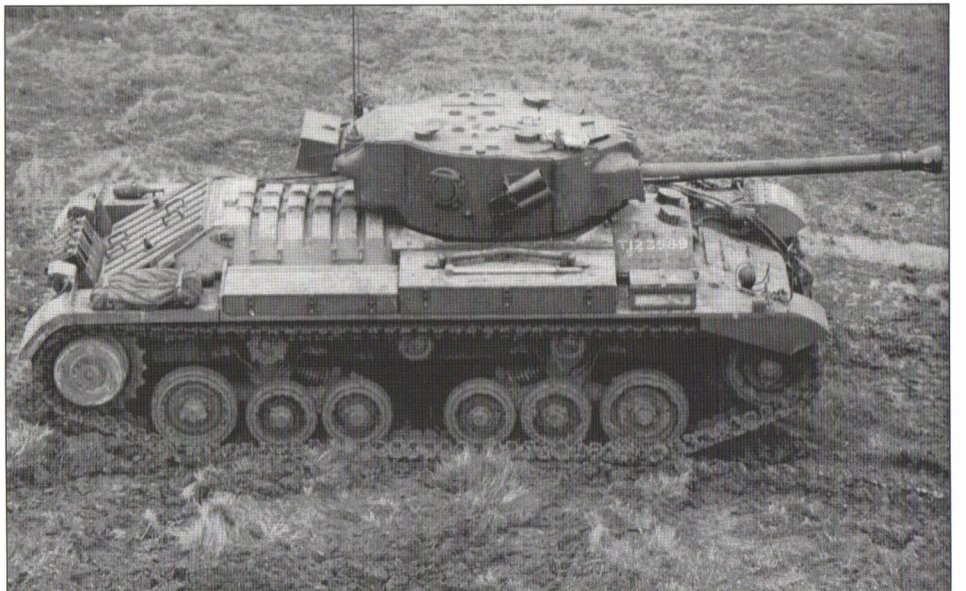
Valentine III, War Department number T66591, displays the primary identifying characteristics of that Mark: extended mantlet and bustle on a three-man turret, with a 2-pounder main gun. The sloped façade on the mantlet outboard of the Besa coaxial machine gun housed an opening for a 2-inch smoke bomb thrower. (Warehouse Collection)

The Valentine VI and VII were Canadian-manufactured. They had a GMC Diesel engine and were similar in appearance to the Valentine II and IV except for a cast instead of bolted bow unit. The Valentine VII featured various internal changes from the Valentine VI as well. This example has a War Department number that appears to be T41103 on the driver's door, and the headlights are not installed. (Patton Museum)



The Valentine XI was the final production mark of the series. It featured welded hull construction and a 75mm main gun in a two-man turret. The manner in which the large hooks over the muffler shroud secured the tow cables is evident. The headlights are the smaller, late type, with brush guards. (Patton Museum)

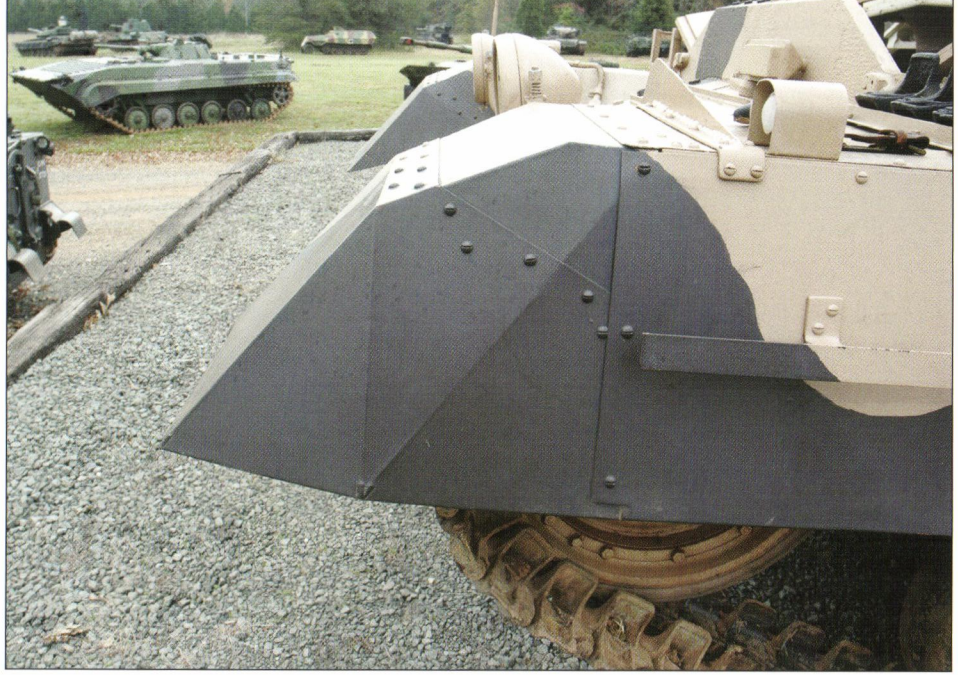
Valentine XI, War Department number T123589, displays a circular pistol port door and frame, as well as two 4-inch smoke bomb throwers on the side of the turret. Stored on the lid of the front storage box on the right fender are the track adjusting tool (the bent-handled implement) and a pick axe handle. A fire extinguisher is stored on the left rear fender, and five liquid containers are strapped to the POW (petrol, oil, water) rack on the rear of the hull. (Patton Museum)



Mark III

This tank at the National Museum of Americans in Wartime is complete with sand shields and a two-color desert camouflage scheme. Below the red-ring tactical symbol for C Squadron on the turret is the vehicle's War Department number, T121944.

The Valentine Mk. III is 7 feet, 5½ inches in height and 17 feet, 9 inches long. The textures of the turret side and bustle are different. In the background, towering over the Valentine, is an adjacent Grant tank—visual evidence of the different design concepts of the two tanks. (Marc Sehring)

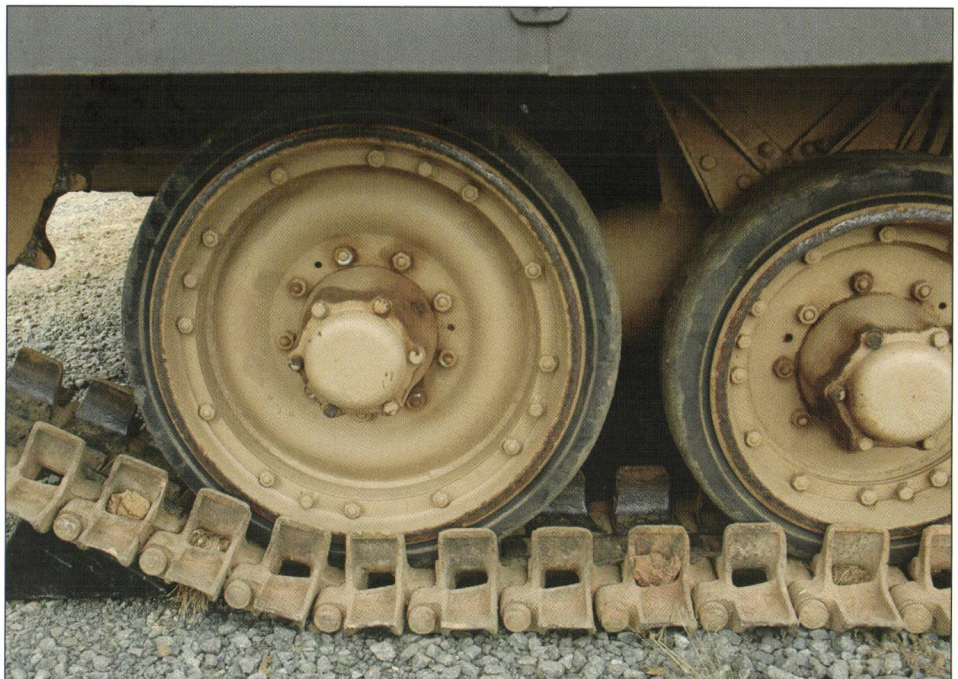


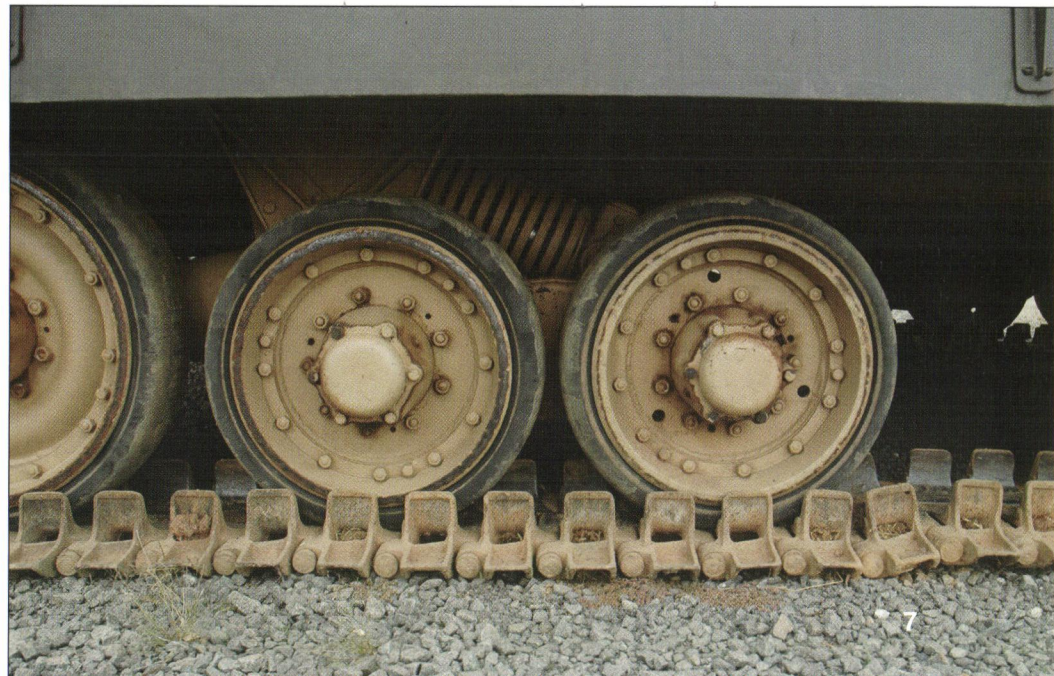
The multi-part sand shields are sheet metal and attached with slotted, oval-head screws. The rails along the side are part of the "Sunshield" camouflage system, where tanks were covered in canvas to make them look like trucks.

The front road wheel and smaller road wheel to the right show typical lubricant staining. The steel on the inner sides of the track guides has been burnished from rubbing by the road wheels.

This view of the left-side suspension units highlights the fact that the rubber tires have rounded edges. The tracks are of manganese steel.

Above the pair of smaller road wheels is the helical spring positioned around a two-way Newton hydraulic shock absorber. The outer perimeters of the small road wheels have three closely grouped bolts separated by two spaced bolts, while the large wheels have only one bolt between each group of three bolts.





Friction with the track guides has worn and chipped paint off the rims of the steel wheels on the left rear suspension unit.

The idler and road wheels (the right front ones are shown here) on this Valentine Mk. III are the smooth "dish" type. Some Valentine road wheels were spoked.

The drum has a ridged design, as is apparent in this close-up picture of the drum and sprocket teeth on the left drive sprocket. The single sprocket is center mounted, to engage the track between the track guides.

The headlights have slotted blackout covers, allowing emission of just enough light for the crew to see in the dark. The headlights are mounted on coil springs on each side to buffer the units from jarring.

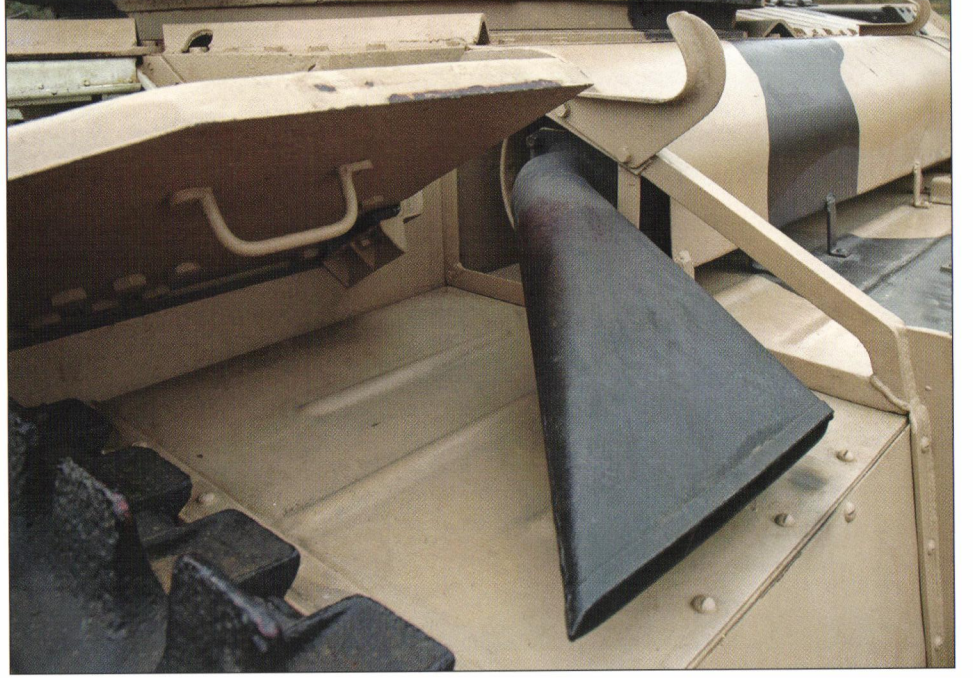
As seen from the right, the left headlight is powered by an electrical wire in a protective conduit that exits the front of the hull through a fitting. Branching off from the conduit is a separate conduit to power the left side lamp. The hexagonal shaft issuing through the oval hole in the fender is part of the track-tensioning mechanism.

The small side lamp is housed inside a heavy-duty, curved guard. A section of four spare track shoes is stored on the fender to the rear of the lamp. Behind the track shoes is the open left-side driver's door.

The angle irons bolted to the glacis are splash guards, to prevent ricocheting projectiles from hitting the plate in front of the driver's face.

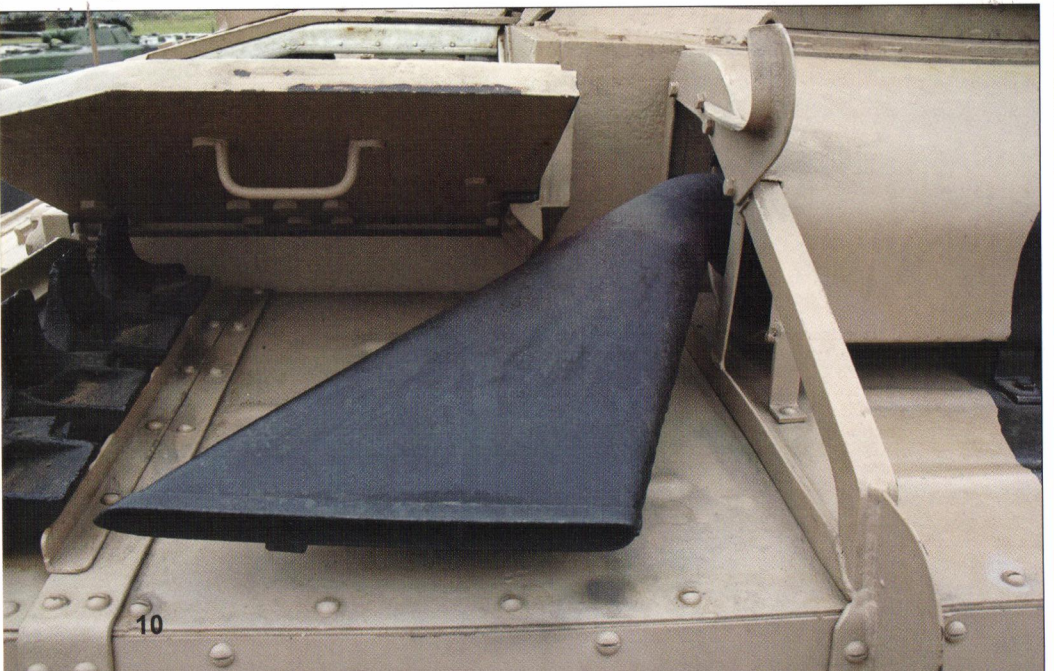
Two driver's doors flank the fixed roof panel at the center of the hull; the left door is shown open. Bolted to the left of the tracks, on the vertical plate, is the hinge-pin cap for the driver's door. The tapered, downward-angled black object to the rear of the hatch is the exhaust. In the foreground is the electrical conduit for the side lamp; much of the paint has peeled off the conduit.

The spare track shoes are held in place by a steel T-bar, clamped down with wing nuts. Projecting from the roof panel over the driver's position is the guard for the left of two adjustable driver's periscopes.



The exhaust (center) is routed through the front of the muffler (right, inside a protective shroud). Early Valentines had a curved grille to protect the muffler, instead of the solid metal shroud.

Below and behind the driver's left door is a stop that holds the open door at this angle. The right door lacked such a stop. The hook bolted to the fender support frame to the right of center was the front of two hooks that held a tow cable.



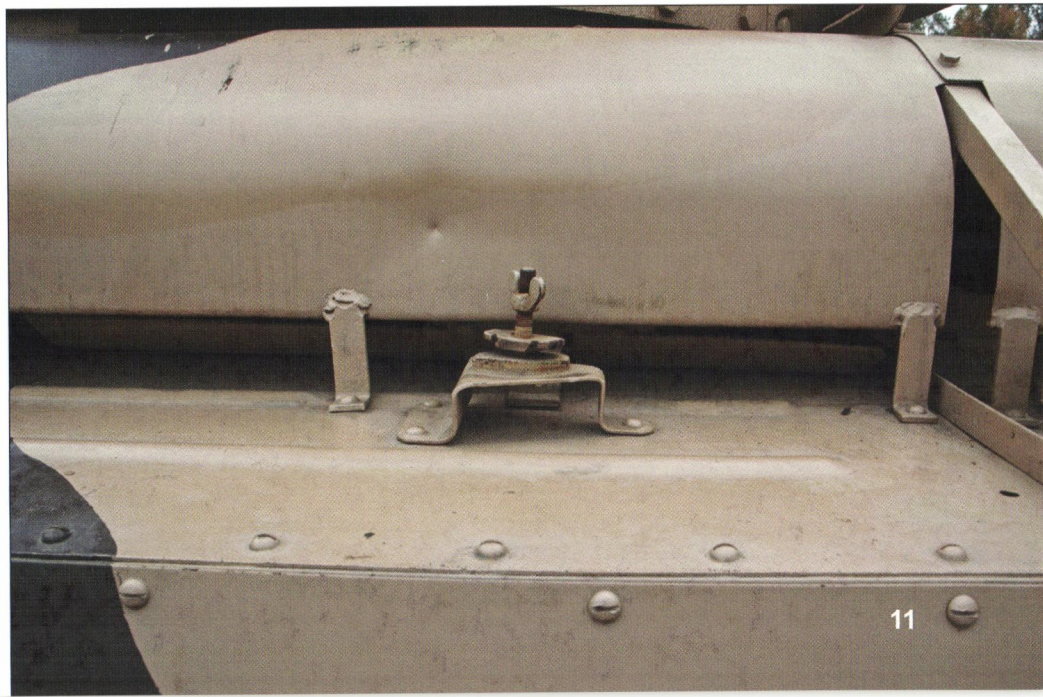
With the left driver's door closed, the view from the front of the vehicle reveals details of the door stop with rubber bumper (left of center) and the tow cable hook at the front of the muffler guard (right of center). The rear hook is also visible.

The brackets to the front and rear of the muffler support the fender and serve as attachment points for the sand shields.

The identification plate screwed to the fender identifies this vehicle as a "Valentine 111" [sic], War Department number T121944, built in 1943. Affixing brass or bronze identification plates to the sides of tanks was a tradition that went back at least as far as the Renault FT-17 tanks of World War I.

On the left fender, outboard of the muffler, is the vehicle identification plate. To the rear of the plate is a bracket to hold a pick axe head. The rear tow cable hook is toward the rear of the muffler shroud.

Details of the pick axe head bracket on the left fender, with its wing nut and washer, are visible, as are the rough weld joints on the hold-down brackets attached to the bottom of the muffler shroud.

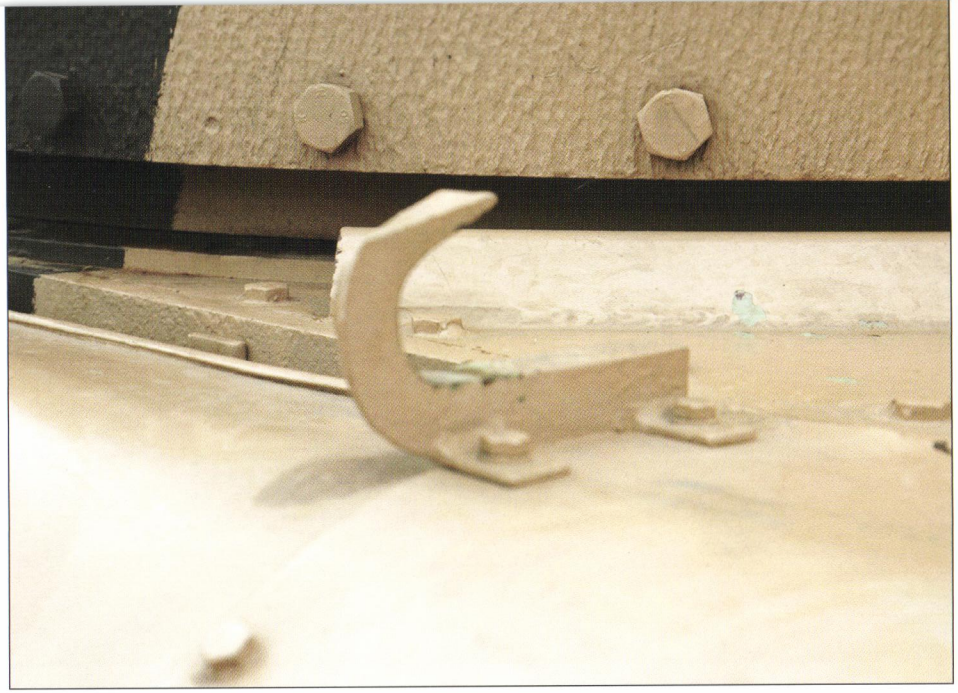


The muffler shroud and the rear tow cable hook are viewed from the rear. Below the lifting handle on the side of the engine compartment door is a rectangular fender support.

A close-up of the rear of the muffler shroud shows the exhaust elbow where it exits the engine compartment.

The fender support to the rear of the muffler is at the center. It is fastened in place with two screws through the hull and two screws through the fender.

The rear tow cable hook over the exhaust shroud is shown from the side. Above the hook is the bottom of the left side of the turret.



The rear tow cable hook is seen from behind.

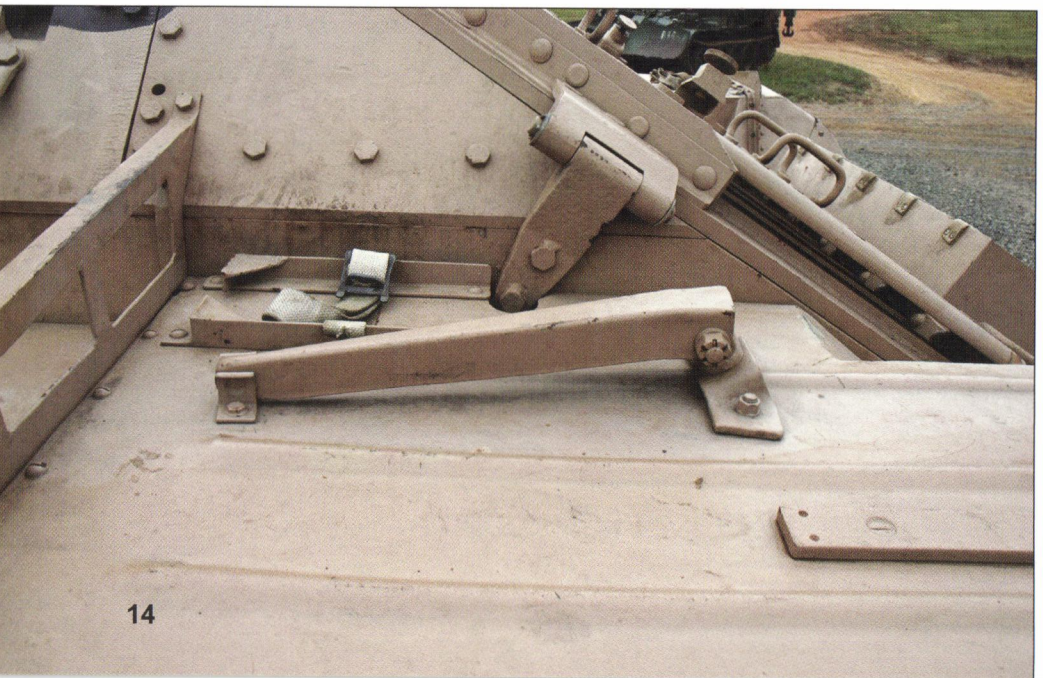
The rear tow cable hook is seen from a slightly forward angle. The angled construction of the hooks was intended to strengthen them.

The manner in which flanges at the bottom of the rear tow cable hook are bolted to the exhaust shroud is shown. To the right are the left rear corner of the crew compartment roof, splash guard, and side of the turret.

This view of the sand shield looking towards the rear of the vehicle shows the method of attachment of the equipment rail.

A characteristic of Valentine fenders is a slight upward curve to the front of the rear fender support (right). The two brackets on the fender between the fender supports secured a crowbar and shovel, stored side by side. Beside and above the fender are two lifting handles on the engine compartment doors, which are hinged at the top.

At the rear of the left fender are a strut to hold open and lock the left radiator access door (center) and a jack (next to the hull). Track tongs and a fire extinguisher would also have been stored on this part of the fender. A radiator door hinge is visible.



The left rear lifting handle on the rear engine compartment door is seen up close.

From 1940 through 1944, 6,855 Valentines were produced in Britain and about 1,420 in Canada in 11 Marks as listed here. The power plant and the armament of the vehicle evolved over time, based on combat experience and manufacturing expediency. The initial AEC petrol engine was rated at 135 horsepower, while the AEC Diesel was rated at 131, and the GMC 6004 Diesel ranged from 138 horsepower on the earliest units up to 210 horsepower in the Valentine XI.

A.F.V. Series Nomenclature

MARK	ENGINE	ARMAMENT
I	AEC (Petrol)	2 - Pounder Gun and 1 - 7.92 Besa
II	AEC (Diesel)	2 - Pounder Gun and 1 - 7.92 Besa
III	AEC (Diesel)	2 - Pounder Gun and 1 - 7.92 Besa
IV	GMC 6-71 (Diesel)	2 - Pounder Gun and 1 - 7.92 Besa
V	GMC 6-71 (Diesel)	2 - Pounder Gun and 1 - 7.92 Besa
VI	GMC 6-71 (Diesel)	2 - Pounder Gun and 1 - 7.92 Besa
VII	GMC 6-71 (Diesel)	2 - Pounder Gun and 1 - .30 Browning
VIII	AEC (Diesel)	6 - Pounder Gun
IX	GMC 6-71 (Diesel)	6 - Pounder Gun
X	GMC 6-71 (Diesel)	6 - Pounder Gun and 1 - 7.92 Besa
XI	GMC 6-71 (Diesel)	75mm Gun and 1 - 7.92 Besa

Some Valentines destined for service in North Africa had racks mounted over the final-drive access door, to hold five two-gallon liquid containers. To the front of the rack are the radiator access doors, each with two lifting handles and a catch that engages the corresponding strut to hold open the door.

A towing pintle is located at the rear of the hull, below the final-drive access door with its two rear-mounted hinges.

The towing pintle is seen from the left side of the vehicle, and a towing eye is apparent to the right on the rear hull plate.

The towing pintle on this tank is one of several British designs used in World War II. Some Valentine tanks had no towing pintle at all.

Webbing straps are riveted to the liquid container rack to hold fuel and water cans in place.

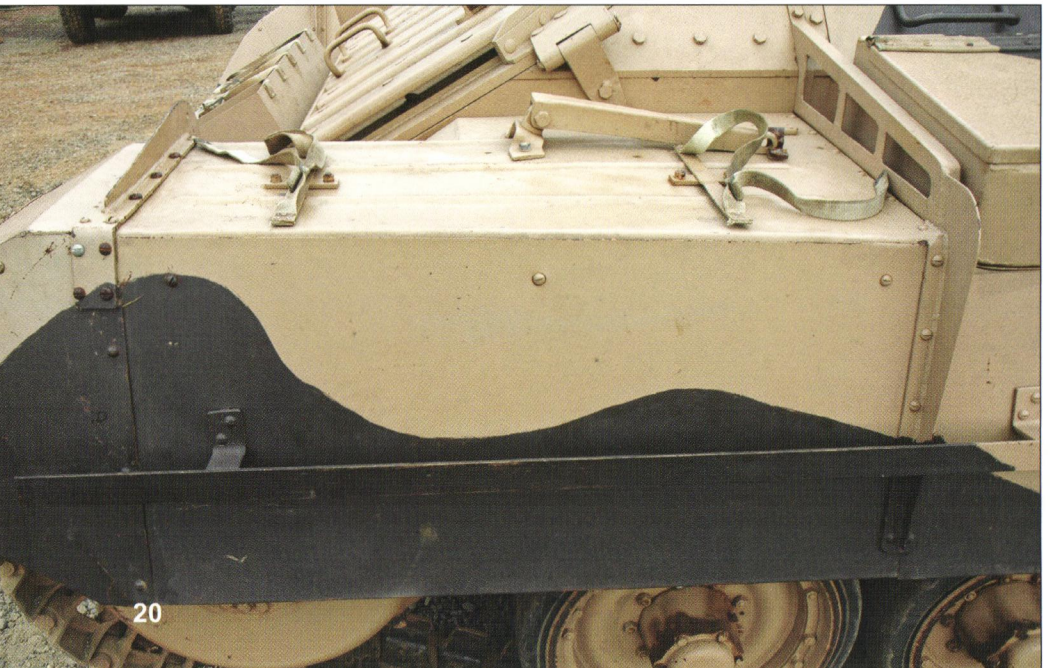
As seen from the rear of the tank, the sand shields are not vertical: the bottoms are at a slight outward angle. Also visible are the design of the pistol port on the turret and the contours of the turret bustle, near the top of which is a protrusion that incorporates a ventilator opening on its underside. (Marc Sehring)

The sand shield brackets stand out prominently in this side view. The turret of the Valentine Mk. III was extended eight inches, both to the front and to the rear, to accommodate a third crewmember—the commander—in the turret.

The flat, split turret hatch of the Valentine Mk. II gave way on the Mk. III to a large, circular hatch with a rotating periscope on the right. Protruding from near the front of the turret roof is a ventilator shroud; next to it is the loader's periscope.

Only on the right side of the vehicle is there a latch for the engine compartment access door. The latch is located on the side of the engine compartment, above the rear of the rear storage box. Lying on the fender below it is the right radiator door hold-open strut. The webbing straps on the rear of the fender would have secured a folded tarp or camouflage netting.

The radiator door strut, camouflage net strap retainers, fender and sand shield bracket, and stowage rail are seen at the rear of the right side of the vehicle.

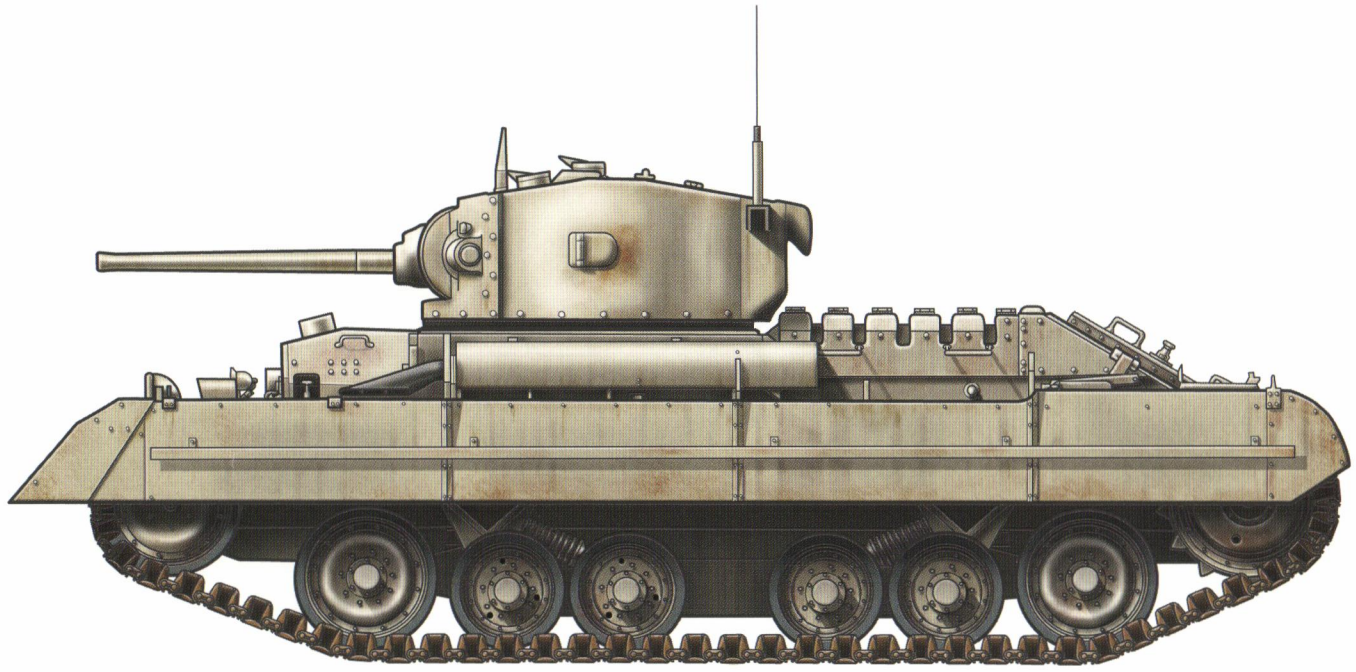


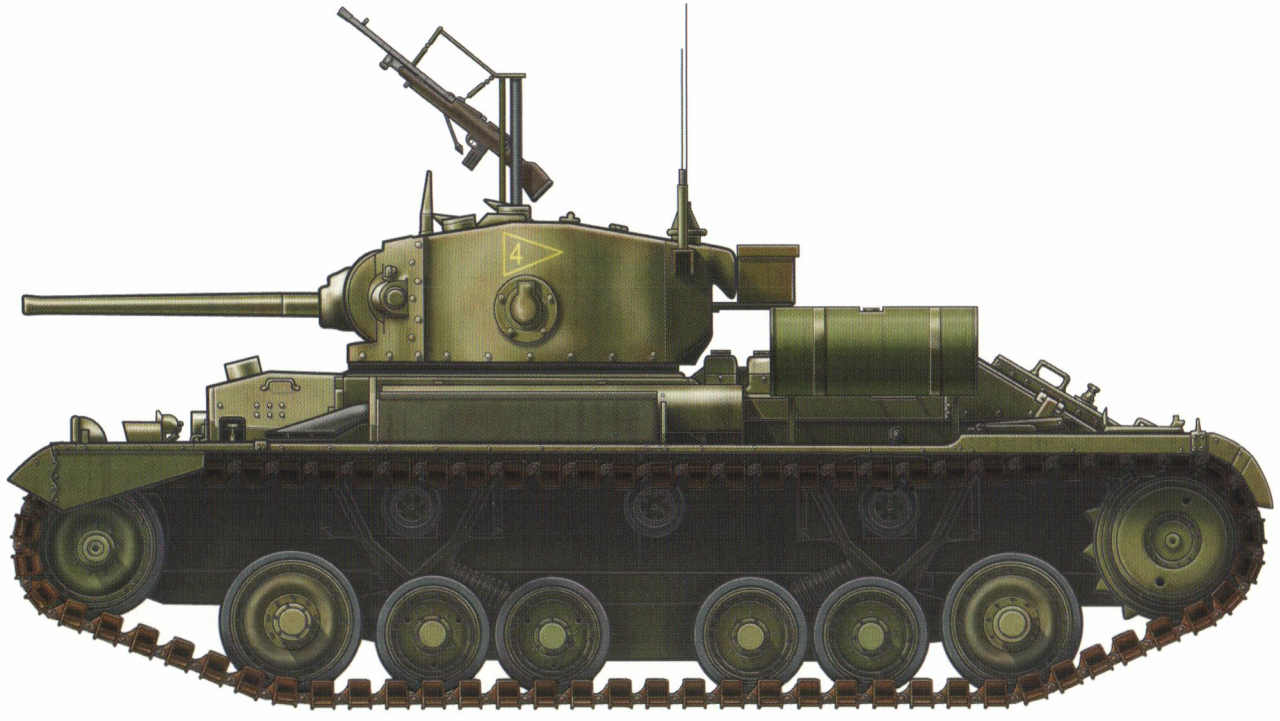
All three doors of the turret hatch are open. Metal straps secure the storage box in place on the turret bustle.

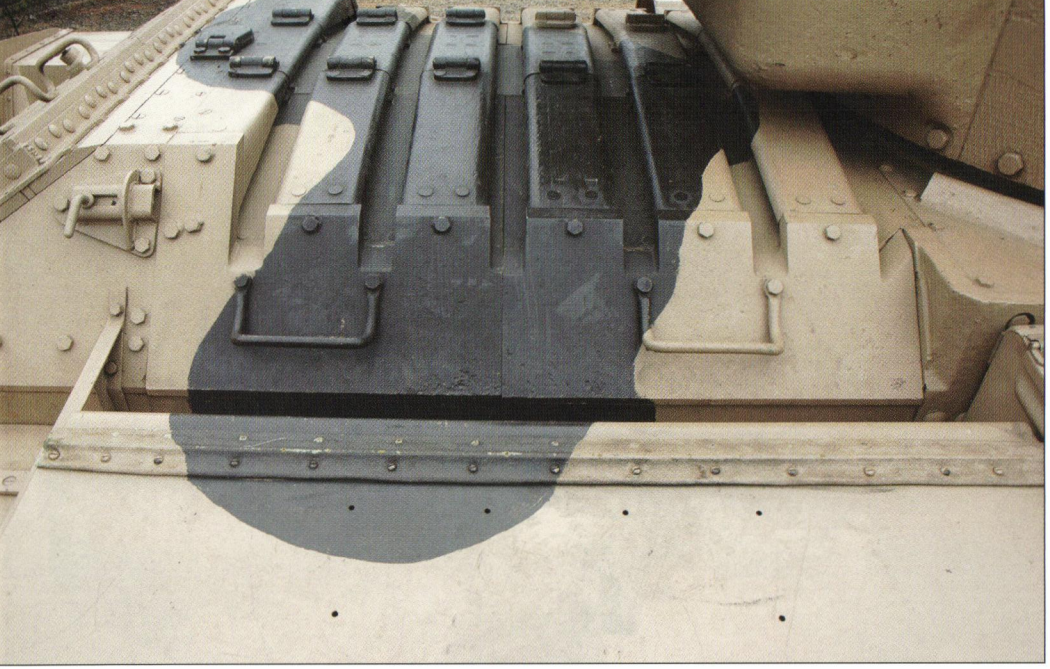
Visible at the top right of the photograph is the right engine compartment door latch. It consists of a simple dead bolt mechanism. The hex bolts on the door (right) are spot welded. The upper hinge of the right radiator door is toward the center of the photograph. The adjacent fender is cut out to provide more than adequate clearance for the strap of that hinge.

(Top) This overall Light Stone Valentine Mark II tank is on outpost duty in the Australian-held sector of Tall al-'Îsá ("Tel Eleisa") near al-'Alamayn (El-Alamein), Egypt, on 19 October 1942.

(Bottom) This Valentine Mk V (NZ13905) of the New Zealand Third Division, Independent Tank Squadron, seen in 1943, appears to be painted Deep Bronze Green, while unit serial insignia "20" is in a brown square. On the left of the hull front is the Tank Brigade insignia of a rampant dragon painted on a black square. The turret marking is a painted pennant surrounding a 4. Painted on the front of the driver's compartment is the tank name "Sidi Barrani" (likely a reference to the Allied victory over invading Italians at the Egyptian village of Sayyidî Barrânî in 1940).





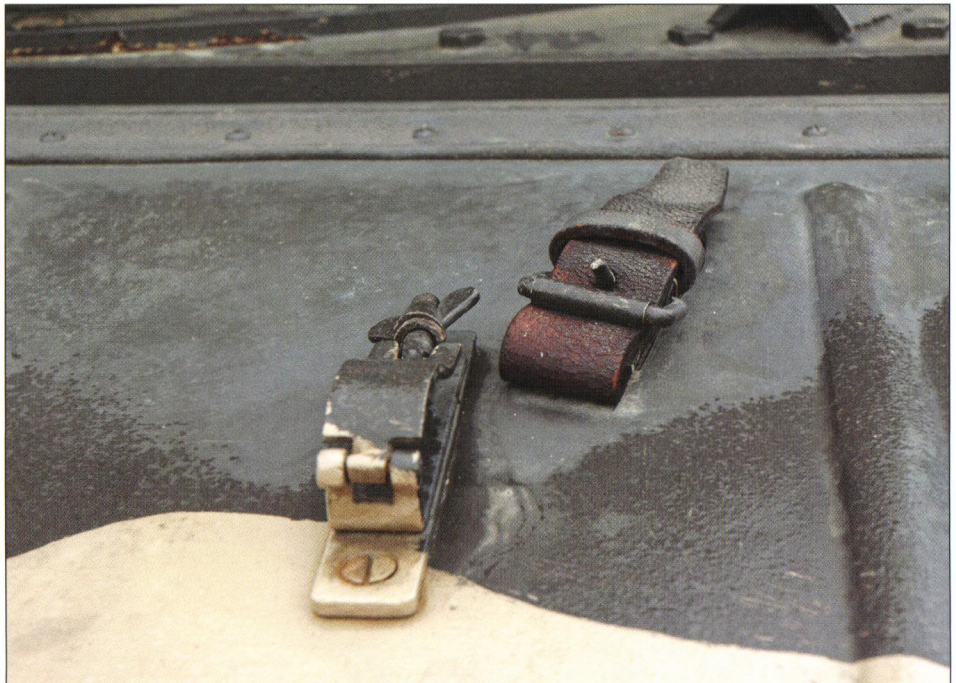


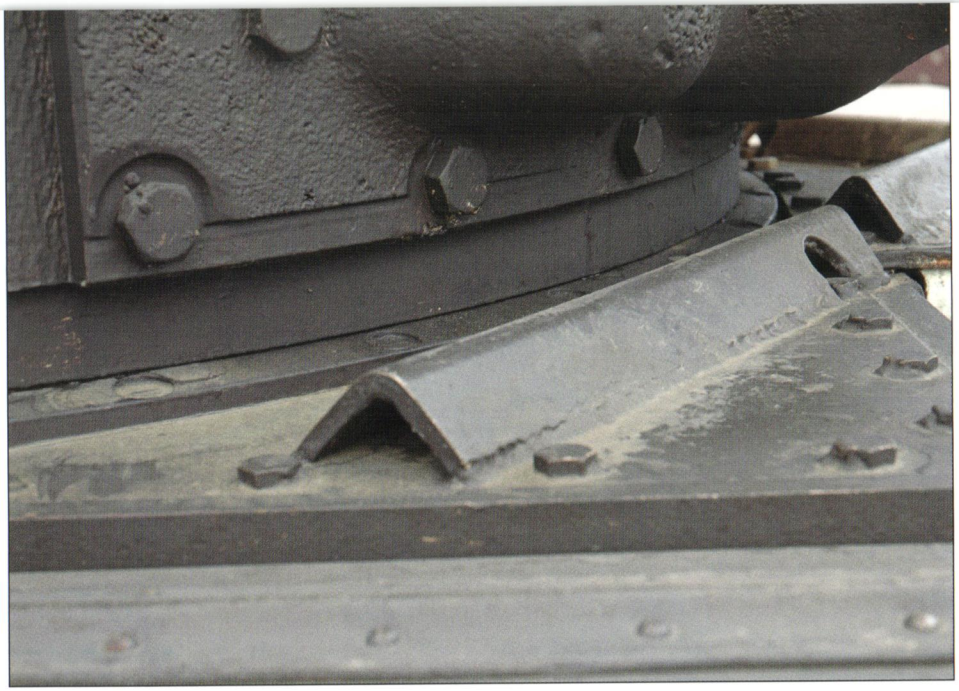
The lid of the rear storage box is in the foreground of this view of the right engine compartment access door. On both sides of the vehicle were two engine access doors with hinges at the tops of the doors, on either side of the centerline of the tank.

The rear storage box is intended to carry blankets and rations. The front storage box held numerous items, such as spare track pins, great coats, a canvas bucket, ground sheets, a sledge hammer, portable stove, tools, a manual, and parts list.

A piece of angle iron is welded to the roof over the rear of the crew compartment to serve as a splash guard to protect the base of the turret, somewhat eliminating the shot trap formed by the bustle as well as the turret base.

The bracket and leather strap once held down a track adjusting tool and pick axe handle on the lid of the front storage box on the right fender. The leather of the strap appears to be original or at least vintage.



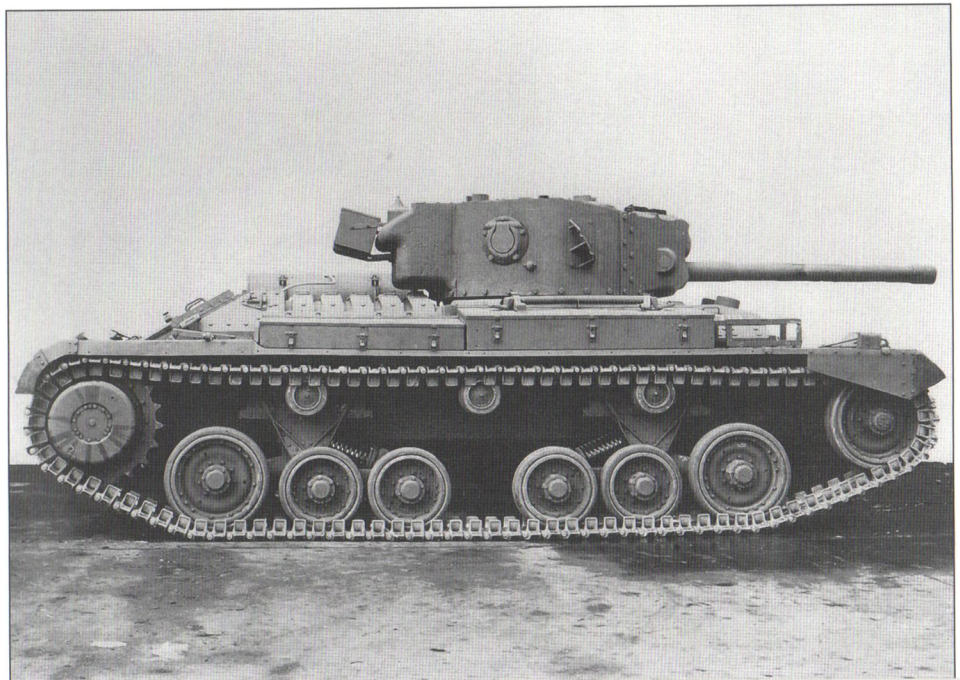


Angle iron pieces are welded to the roof over the front of the crew compartment to form splash guards. Large hex bolts hold the sides of the turret to the base of the turret.

The rack on the right fender originally held two wooden blocks, one large and one small, for use under the jack. There is a retaining strap on top of the rack. The open right door allows a glimpse into the driver's compartment.

The Valentine IX is a Diesel-powered version with a 6-pounder main gun. The gun on this example is the Mk. V L/50 with a counterweight at the muzzle end. Mounted on the bustle is a box that held ammunition for an unmounted Bren machine gun that was part of the tank's defensive arms. (Patton Museum)

Visible on the inner surface of the driver's right door are a grab handle and a latch on the far end. The cap for the door's hinge pin is bolted onto the front plate in the foreground.



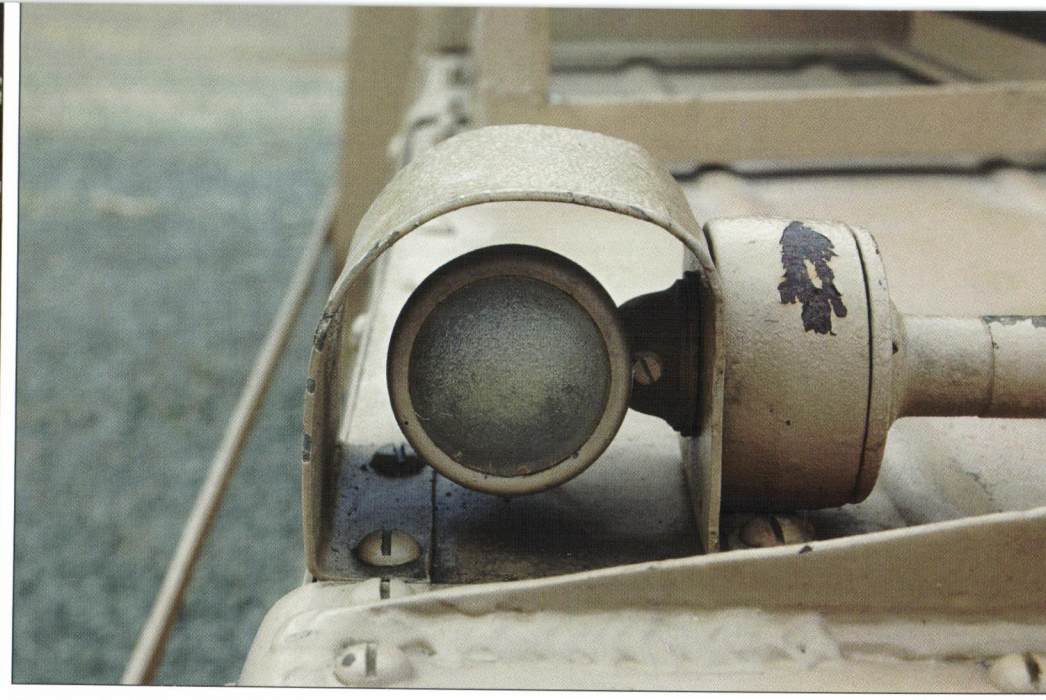
The thicknesses of the driver's right door and the plate to the front of the driver's compartment are apparent. The driver's two rotating periscopes are visible.

The layout of the electrical conduits for the right side lamp and headlight is similar to that of the left lights. To the left is the bracket for the driver's rear-view mirror post.

The guard for the right side lamp is in the foreground and the profile of the front fender support is also visible. The door for the driver's forward vision port is open.

As viewed from behind, the side lamp is mounted to the inside of the guard, with an electrical connections box on the outside of the guard.

The driver's rear-view mirror is adjustable for height and angle. At the bottom of the mirror post, next to the outboard bracket, is a small leg that acts as a stop, limiting the forward travel of the post.



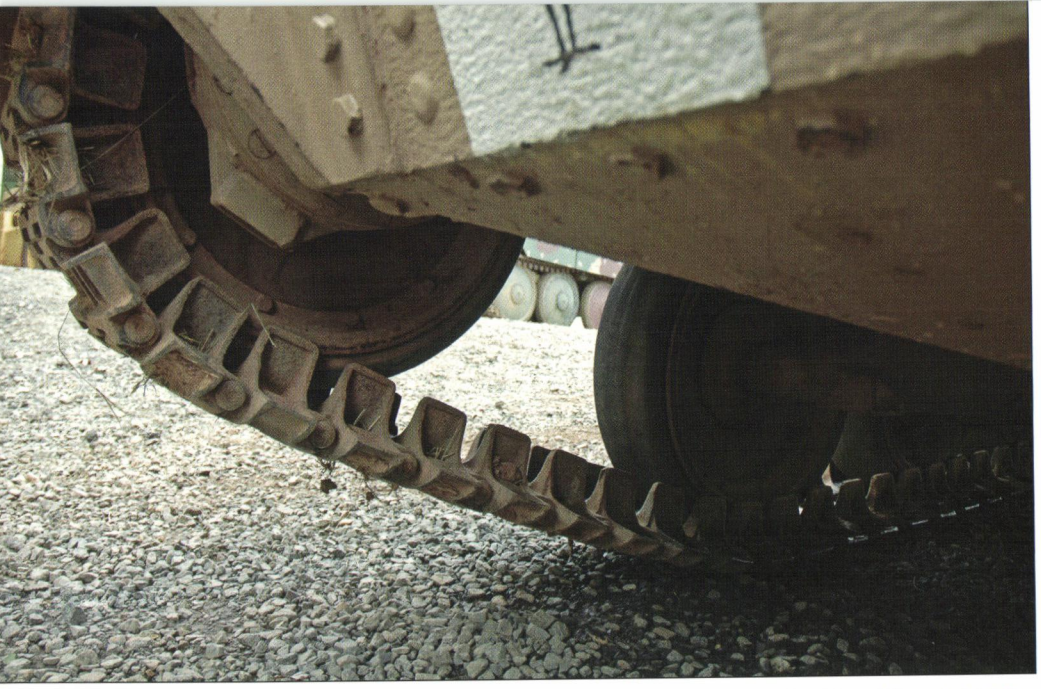
The front of the right side lamp and guard are seen up close.

The right idler support and inner surface of the idler wheel are seen here.

In this look at the left idler support and inside of the drive sprocket, the hollowed-out protrusion at the bottom of the bearing is designed to accept the track adjusting tool. Also visible are details of the inner sides of the track pins.

With their multi-angular construction, the fronts of the sand shields of the Valentine Mk. III are rather intricate in design. These constructions protruded relatively far in advance of the front of the tracks. The Mk. III also features an extended mantlet design.

This frontal view of the Valentine Mk. III highlights its fairly low profile and its mix of some well-angled front hull plates together with the vertical armor that would be less effective in deflecting antitank projectiles from the turret and in front of the driver's position.

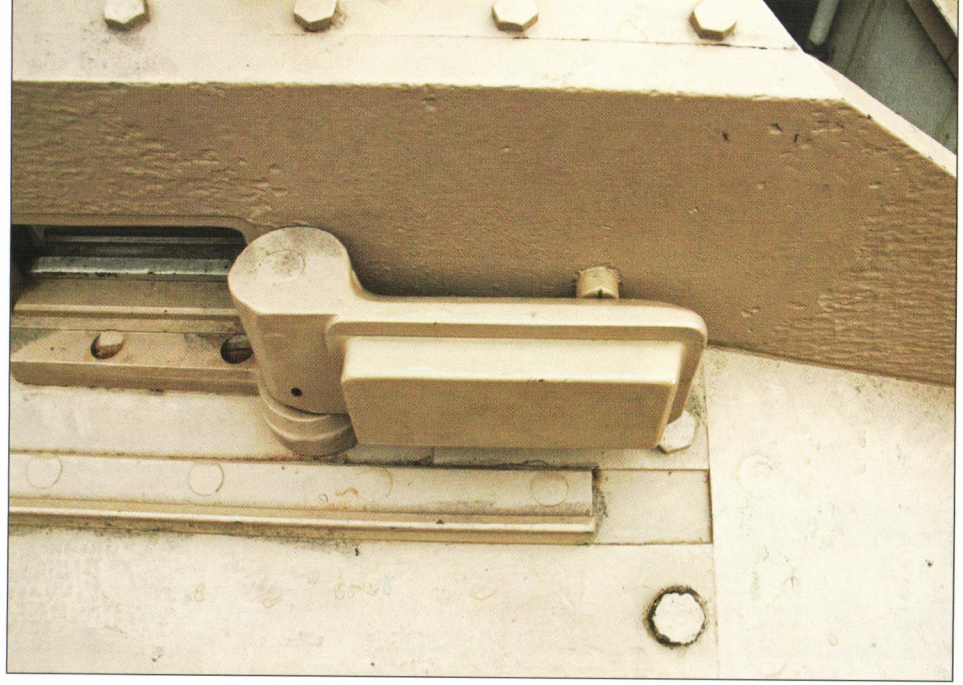


Protruding from the lower side of the idler support, seen on the inside of the right idler wheel, is a socket into which the track adjusting tool is inserted, to set the front-back position of the idler wheel.

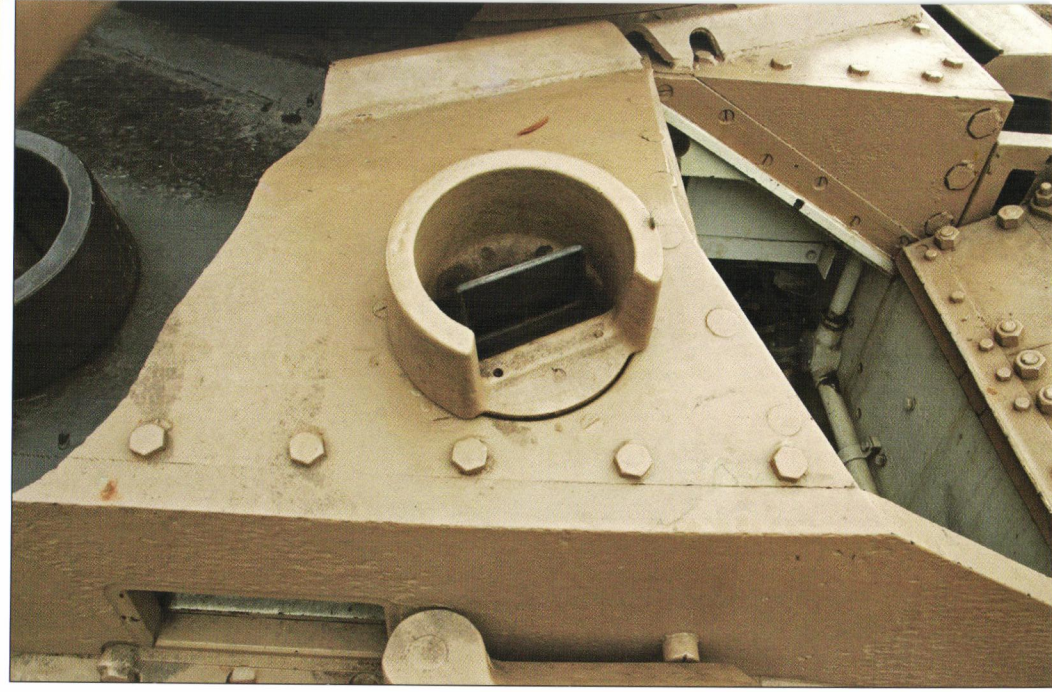
The lower front hull plate is at the top of this view of the underside of the Valentine Mk. III hull.

The manganese-steel tracks (seen from the front left of the vehicle) are 14 inches wide, with rectangular cutouts to engage the sprockets at the center of each track shoe.

The inner surfaces of the tracks show typical burnishing where the wheels make contact between the track guides. Because of their manganese-steel composition, the tracks on Valentine tanks were resistant to rust and corrosion.

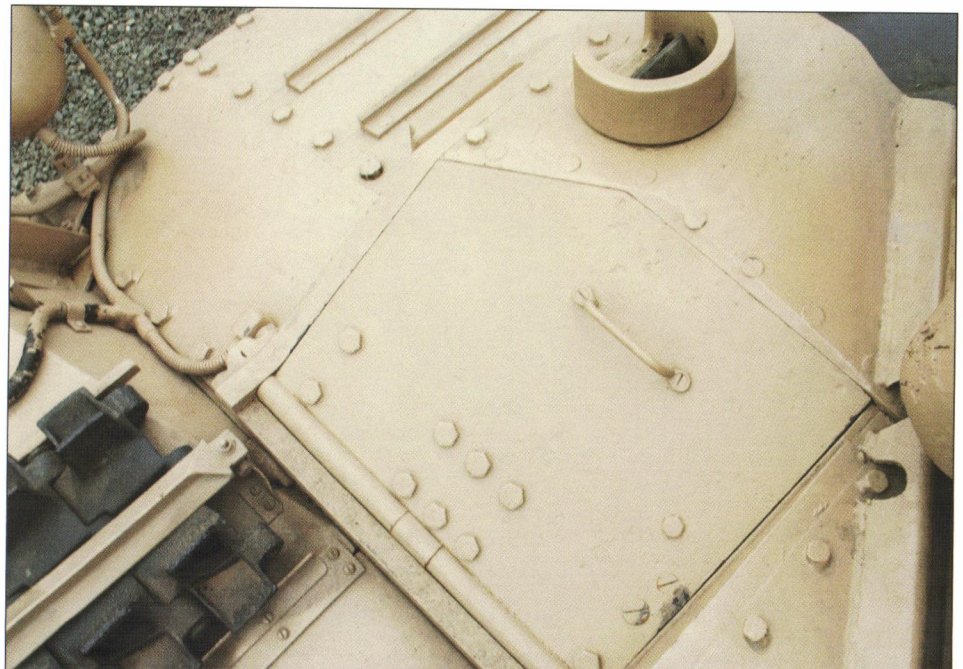


The open door for the driver's forward vision port is seen from above. The door is mounted on a vertical hinge pin, with an operating lever located inside the tank to the front left of the driver.



The driver's left periscope (center) and right periscope (part of which is visible to the left) are affixed to rotating mounts that also incorporate a C-shaped guard around the sides and rear of the periscopes.

As seen from above, the left driver's door is assembled from armor plate with hex bolts holding the parts together. A thin grab handle fashioned from steel rod is screwed to the exterior of the door.



This close-up of the right headlight assembly shows the mounting bracket and yoke, slotted blackout cover, and the suspension springs that protect the unit from the jolts and shocks of traveling on rough surfaces.

The design of the Valentine's headlights is the same as that used on the Matilda Mk. I and Mk. II infantry tanks. The hexagonal shaft protruding through a slot in the side of the fender is part of the idler wheel adjusting assembly.

Features of the mantlet and gun mount of the Valentine Mk. III are in view. The irregular-shaped aperture to the left is for the 2-inch smoke bomb thrower. To the right of that aperture are the Besa 7.92mm coaxial machine gun; 2-pounder main gun; and aperture for the gunner's telescope.

In addition to the details of the mantlet and rotor shield and the driver's periscopes and guards, two open doors can be seen atop the turret in this photograph. The three thin rods protruding above the mantlet are the fixed vane sight. They enabled the commander to lay the gun roughly on a target.

The muzzle of the Besa 7.92mm coaxial machine gun protrudes through the rotor shield. Below it are faintly visible casting numbers. To the left is the aperture for the 2-inch smoke bomb thrower.

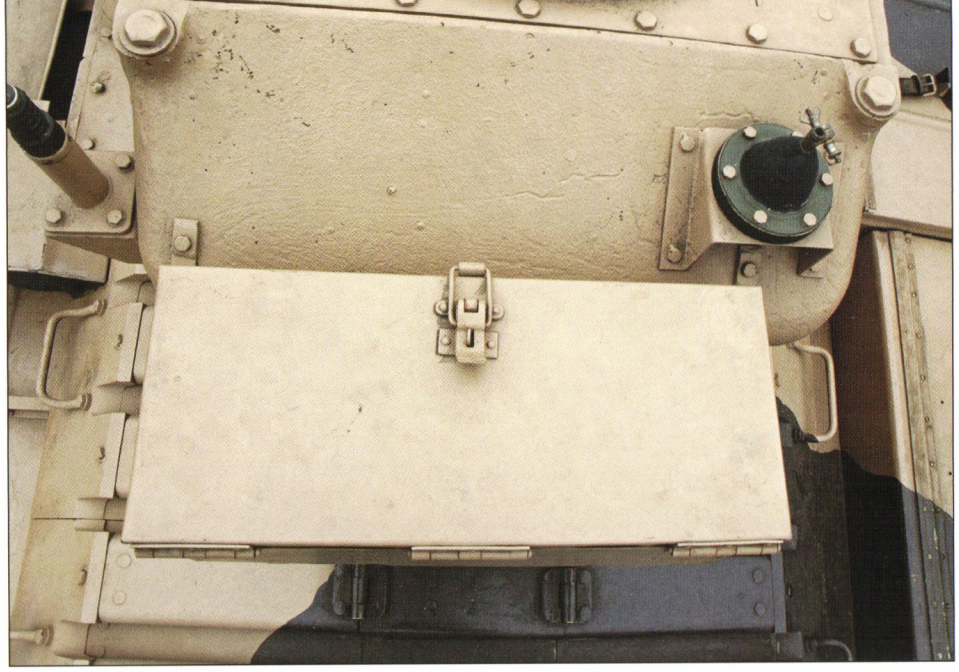
The front of the body (or receiver) of the Besa machine gun is exposed and lacks armored protection, as seen from the side. A flash suppressor is fitted over the muzzle.

The Besa machine gun is viewed from above.

The 2-pounder gun mount and gunner's telescope slot are viewed from the left side. The telescope slot has a stepped appearance, with a recessed inner surface containing the slot. To the lower right is the gun mount's trunnion cap.

The armor on the turret sides between the mantlet and bustle has a very pronounced and deep texture. Turret gun ports of several different designs were employed on Valentines; this one incorporates a flat, top-hinged door, flush-mounted to a circular flange that bolts to the turret.

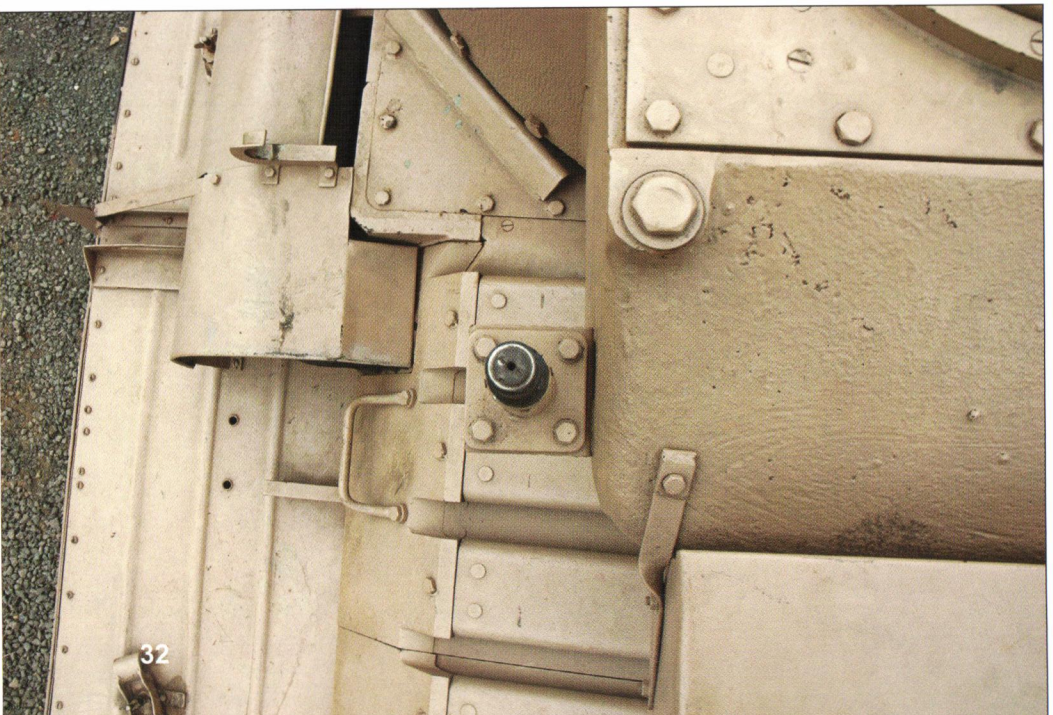
The "A" antenna mount for the No. 19 wireless radio set is on a bracket bolted to the left rear side of the turret bustle, the rough texture of which is apparent. To the right is the storage box on the rear of the bustle. (Joe DeMarco)

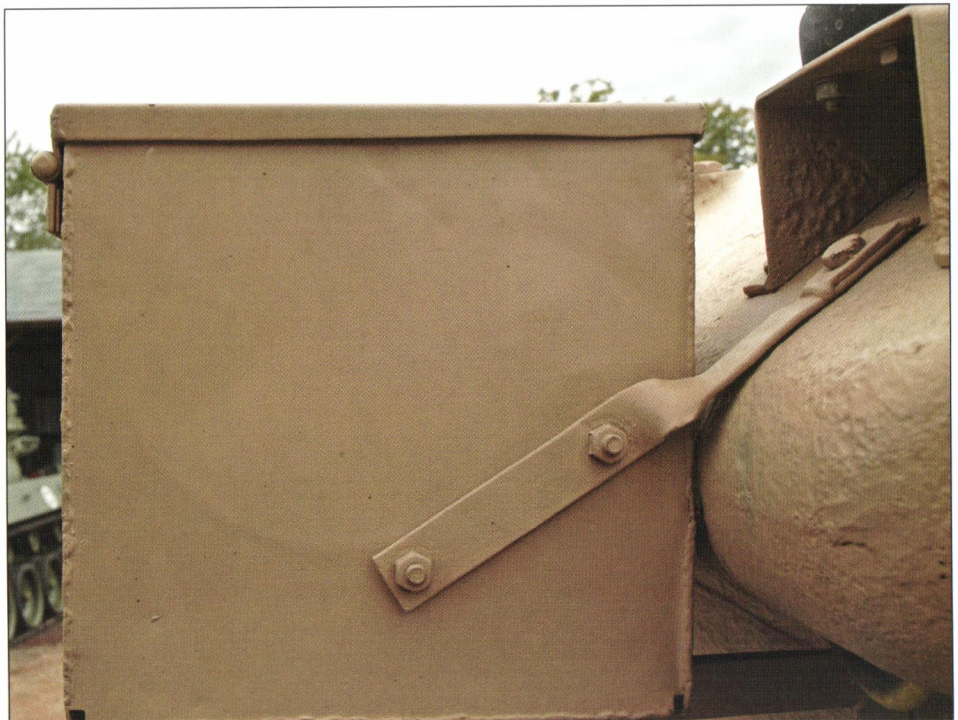


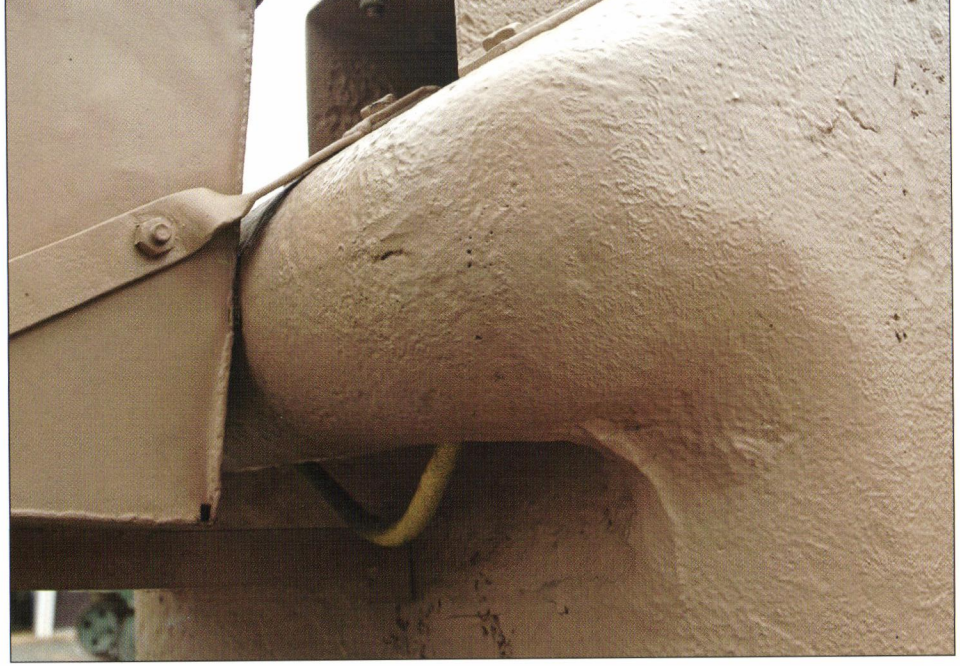
The turret bustle storage box, seen from above, is rear-hinged and has a single latch forward. To the right are the bracket and base for the No. 19 wireless set's "B" antenna.

At the center of this overhead view is the left wireless antenna mount. The left rear of the turret bustle is at the right; to the upper left is the top of the muffler shroud.

On the right side of the turret bustle storage box is a the twisted steel strap that serves as a mounting bracket. The right antenna bracket is to the upper right. The thinness of the steel of the box's lid is apparent.





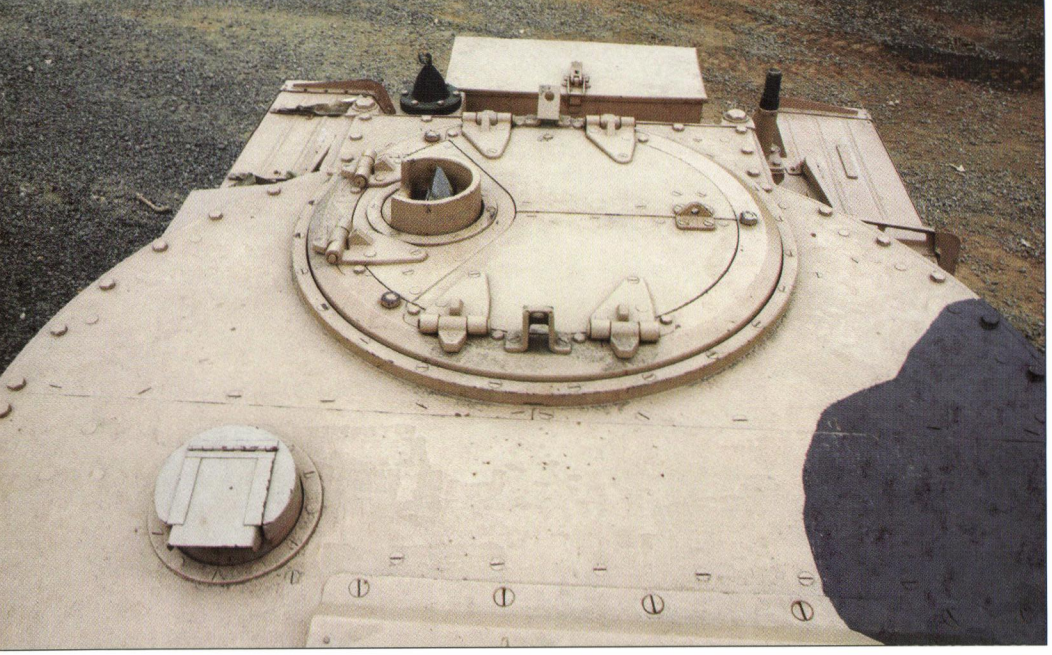


Under the protrusion at the top of the rear of the bustle is the ventilation opening that facilitates air circulation through the turret, and especially over the wireless sets in the turret bustle.

Seen beyond the right antenna mount with its rubber boot is the turret hatch. The fixture positioned between the two rear door hinges is part of the door hold-open mechanism. A similar part is attached between the front door hinges.

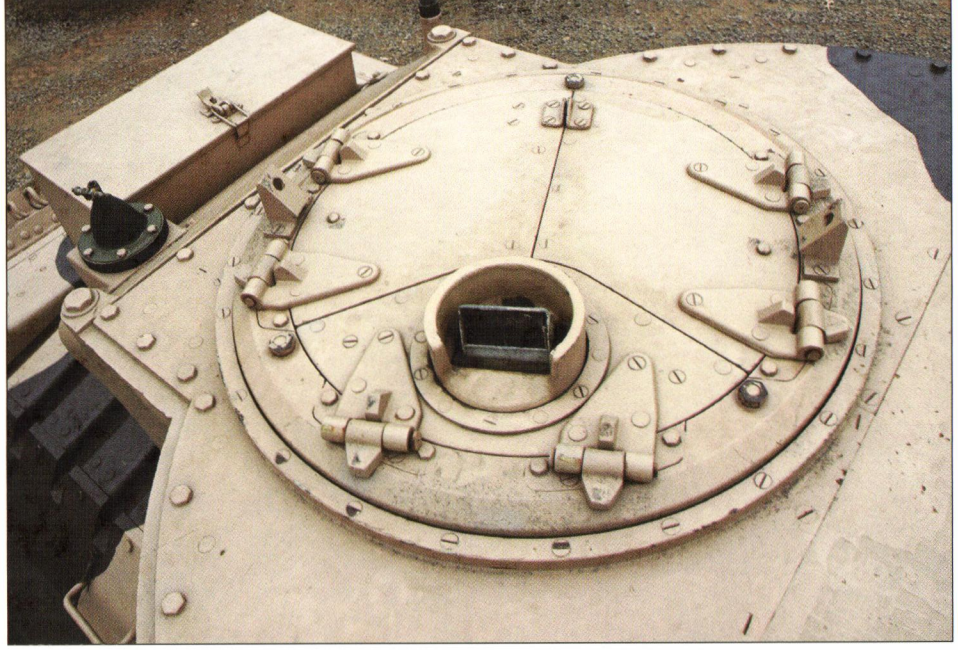
The flange, or outer ring, of the pistol port is fastened to the side of the turret with four hex bolts.

The hinge pin is visible at the top of the right pistol port flange, seen here in profile from the front. The texture of the turret armor varies from fairly smooth to very rough.



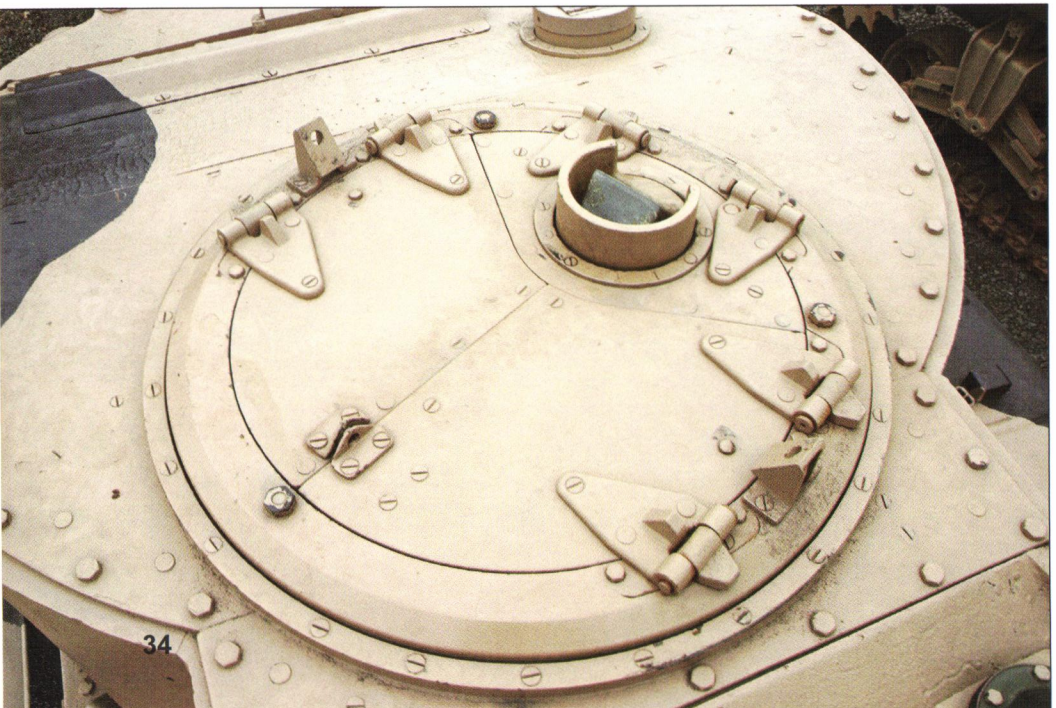
Each of the hinges of the three doors of the turret hatch has built-in door stops on the inner leaves. Screwed to the rim of the hatch between the hinges of the two larger doors are door hold-open brackets. A top cover with a hinged flap is fitted over the loader's periscope guard.

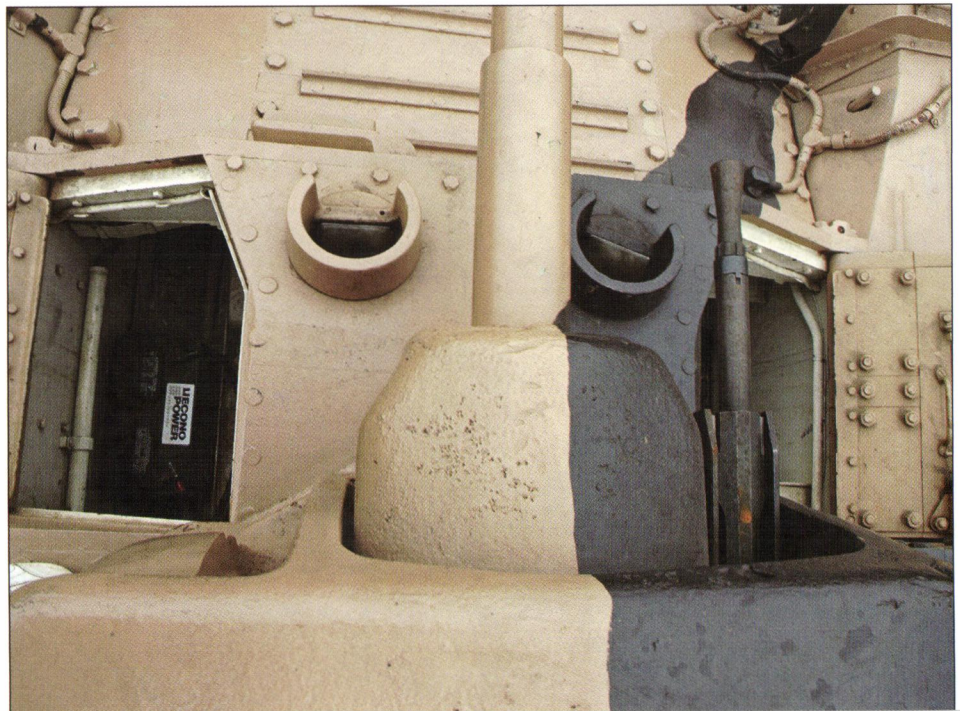
The turret hatch can be rotated. The two side-by-side brackets along the inner edge of the large doors are for padlocking the doors.

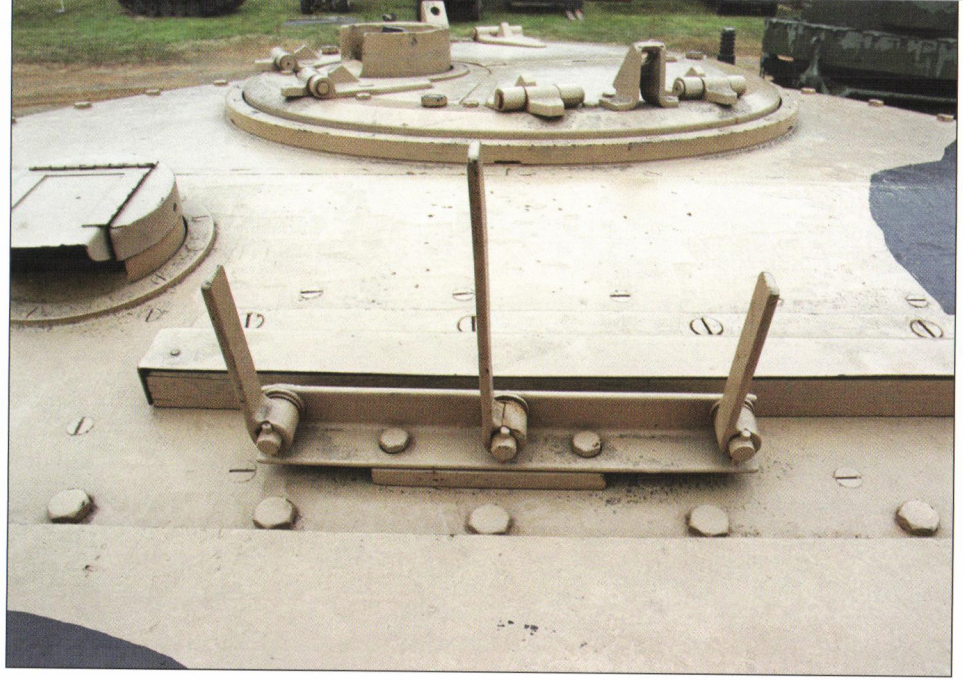


The smallest of the three turret hatch doors incorporates a periscope on a revolving mount. The armored C-shaped enclosure around the periscope protected its rear and sides from small projectiles.

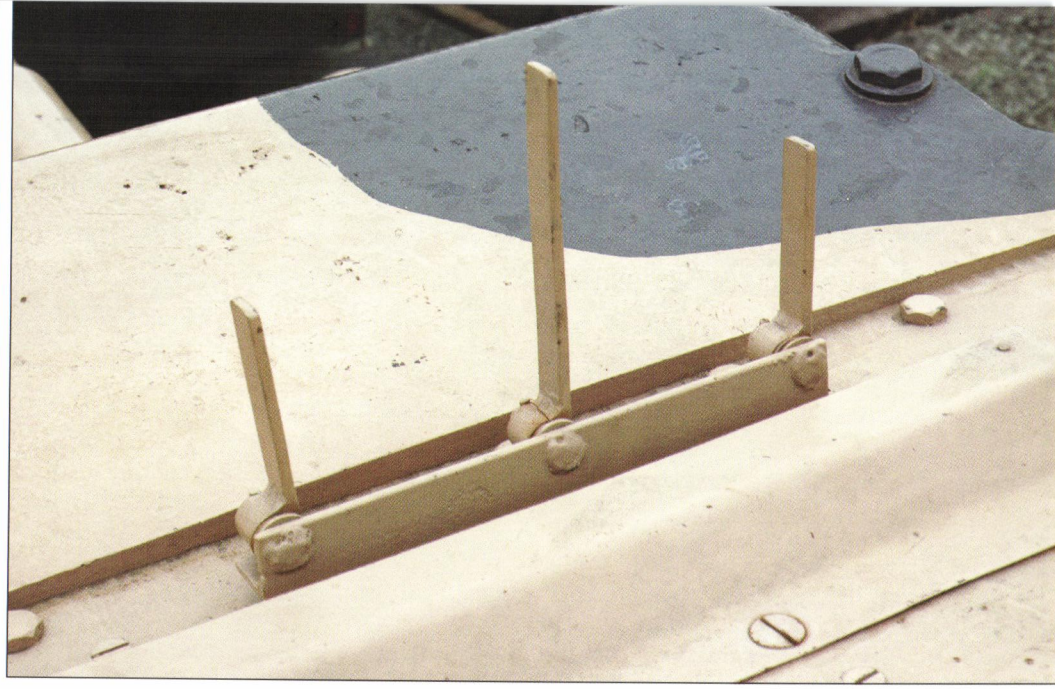
Viewed from the top of the turret are the top of the gun mount, the Besa coaxial machine gun, and the driver's open doors. The latch on the right door, with a pull cable extending to the front, allows the driver to unlatch the door without twisting around awkwardly.





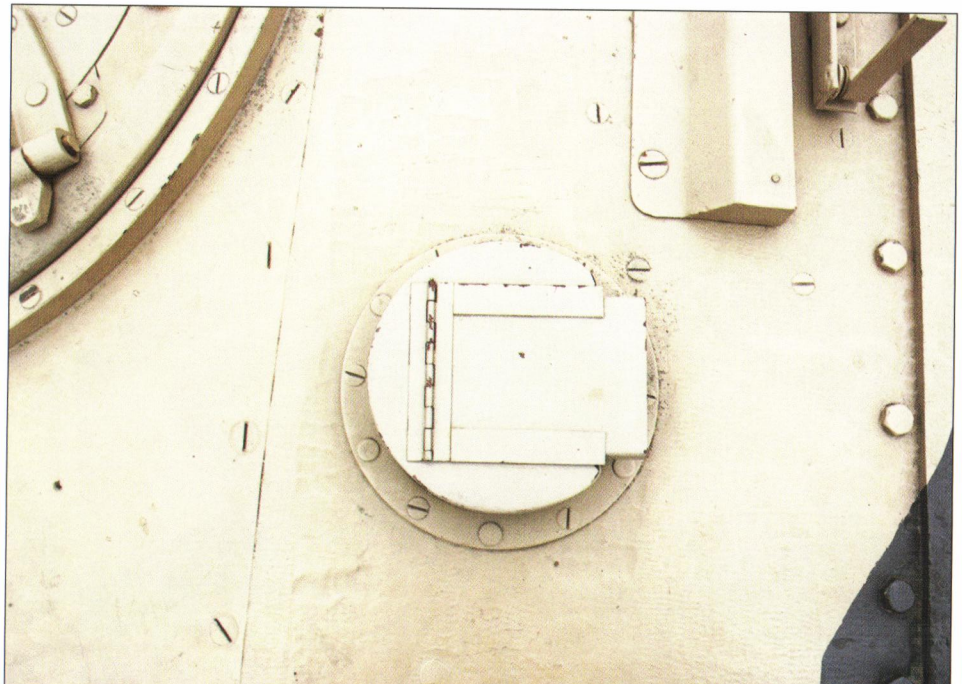


A fixed vane sight with three blades is bolted to the front of the turret roof. When the turret hatch was rotated with the periscope to the front, the commander could view the vane sight and use it to lay the main gun roughly on target.

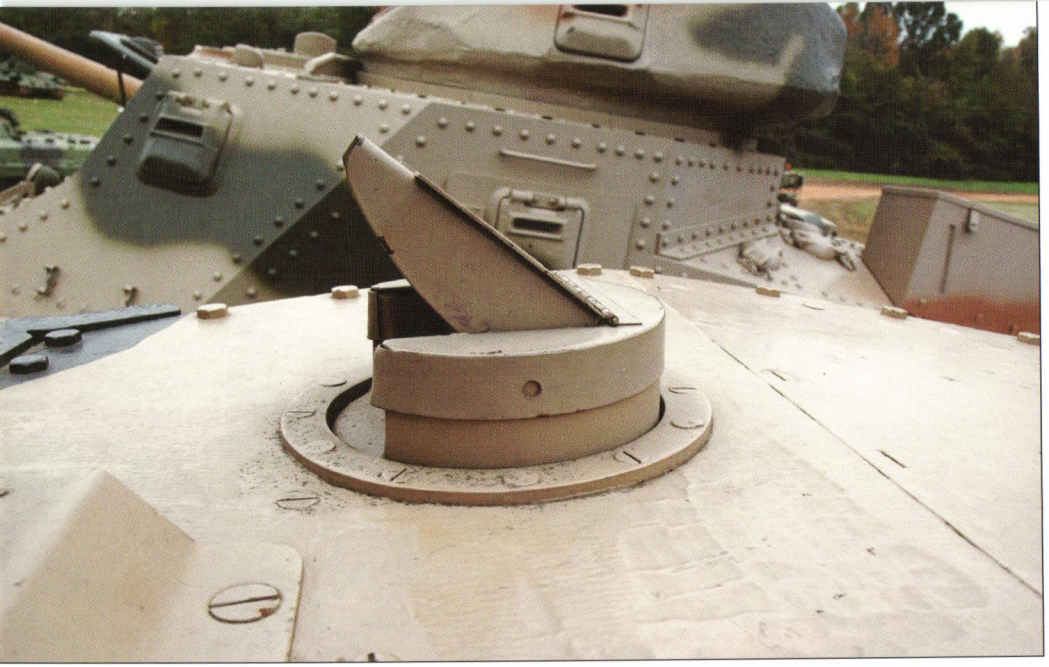


As viewed from the rear, the blades of the vane sight have loops at the bottoms through which bolts secure them to a bracket consisting of an angle iron.

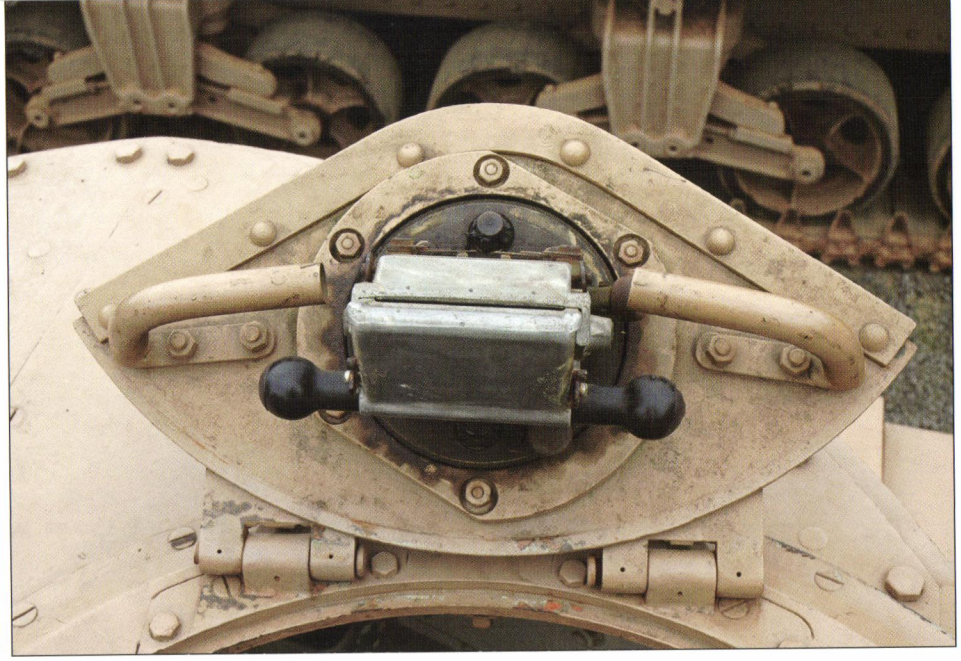
As viewed down from the right side of the turret, the loader's periscope mount is at the center. To the upper right are the right end of the front turret ventilator cover and part of the vane sight.



The objective lens of the periscope is visible in this frontal view of the loader's rotating periscope and mount. The hinged top cover is tilted upward. Surrounding the base of the periscope guard is a mounting ring that is secured to the turret roof with slotted screws.



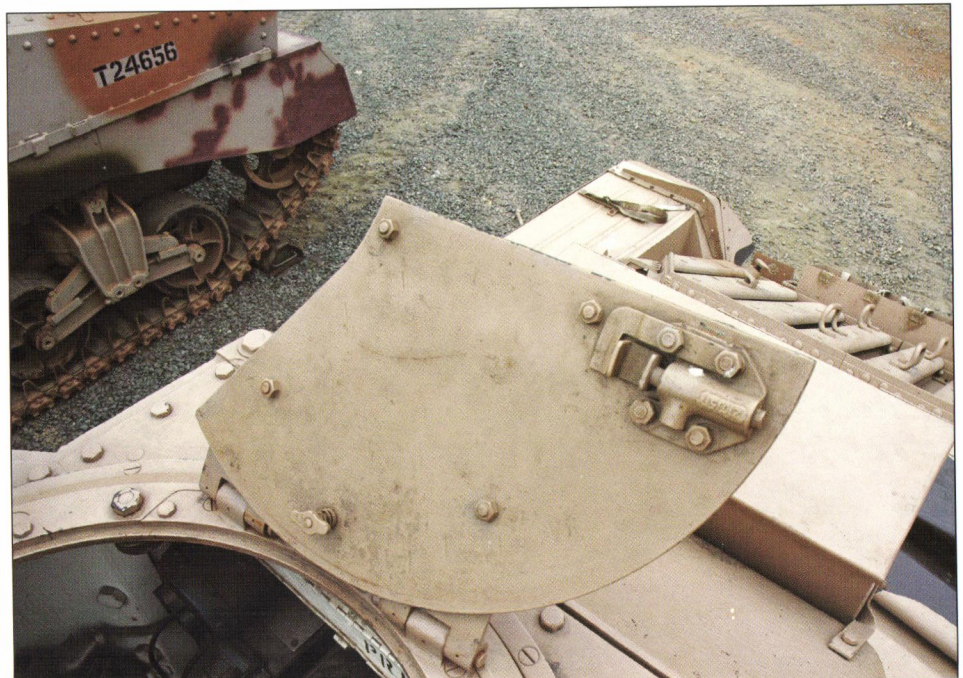
The periscope can be tilted to view upward. To accommodate this feature, the top cover can be raised using a lever inside the turret.



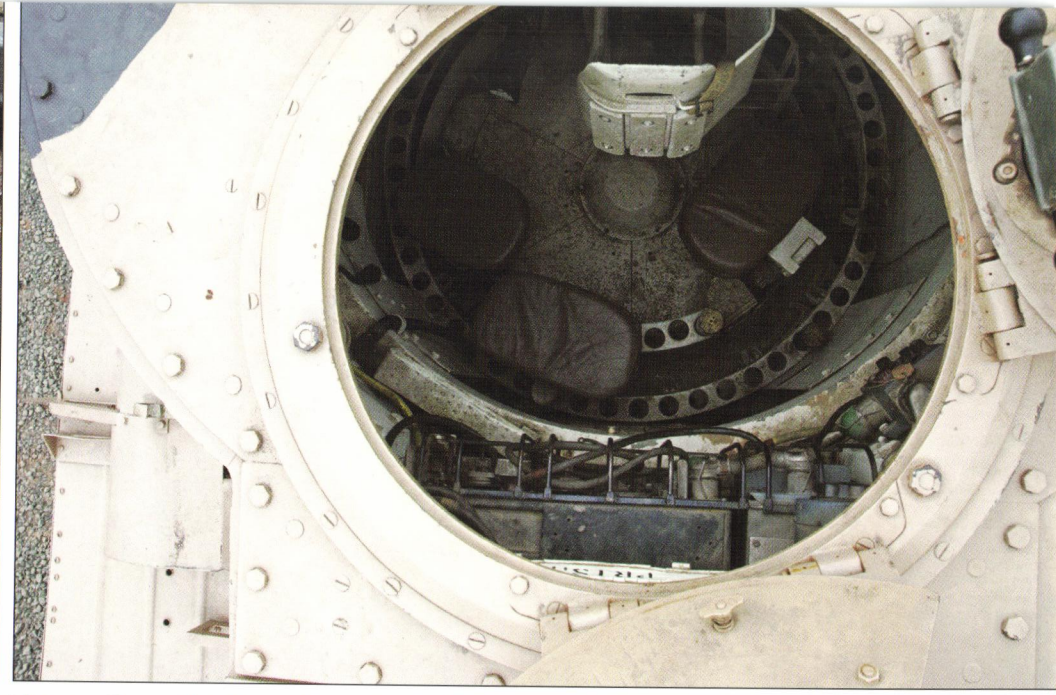
The bottom of the commander's periscope and mounting flange are visible on the opened turret door. The commander used the large, curved handles on each side of the periscope to rotate the hatch.

The left grab handle is in the foreground in this view of the left side of the commander's periscope. The flange riveted to the edge of the door forms a rest for the edges of the other two door panels when closed. The left-side door of the turret hatch similarly has a flange riveted to its inner edge, to form a weather seal with the right door when it is closed.

A close-up of the right turret door (with the periscope facing forward) includes details of the large dead bolt-type latch at the top. The small turn handle near the bottom of the door activates a pin which extends to engage the door hold-open bracket mounted between the door hinges, thus locking the open door in place.



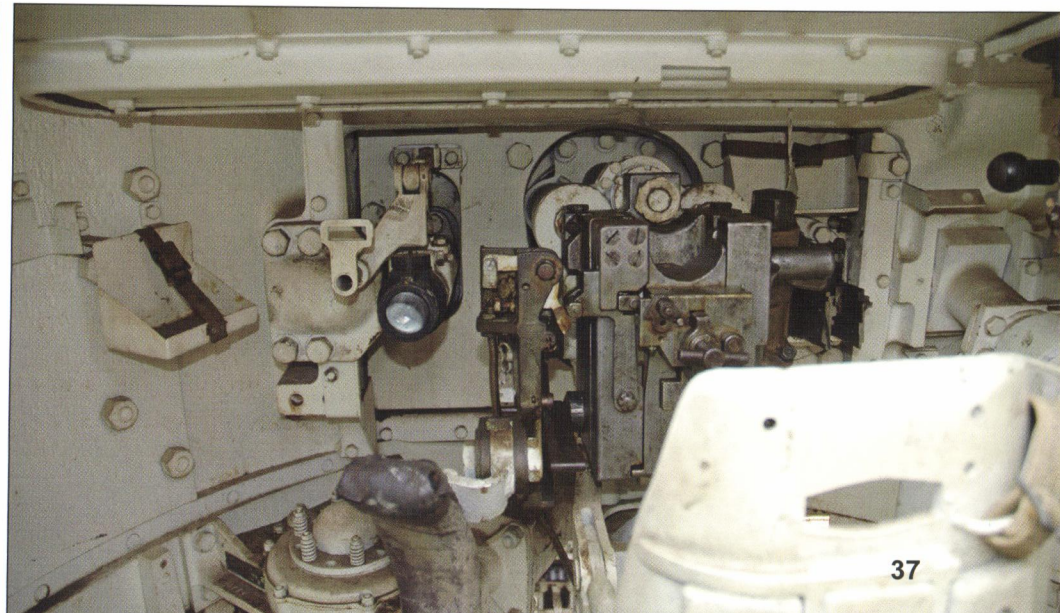
The left turret door lacks a latch but has a flange bolted to its straight edge, upon which the right door rests when closed. This door also has the turn handle for the door hold-open mechanism.

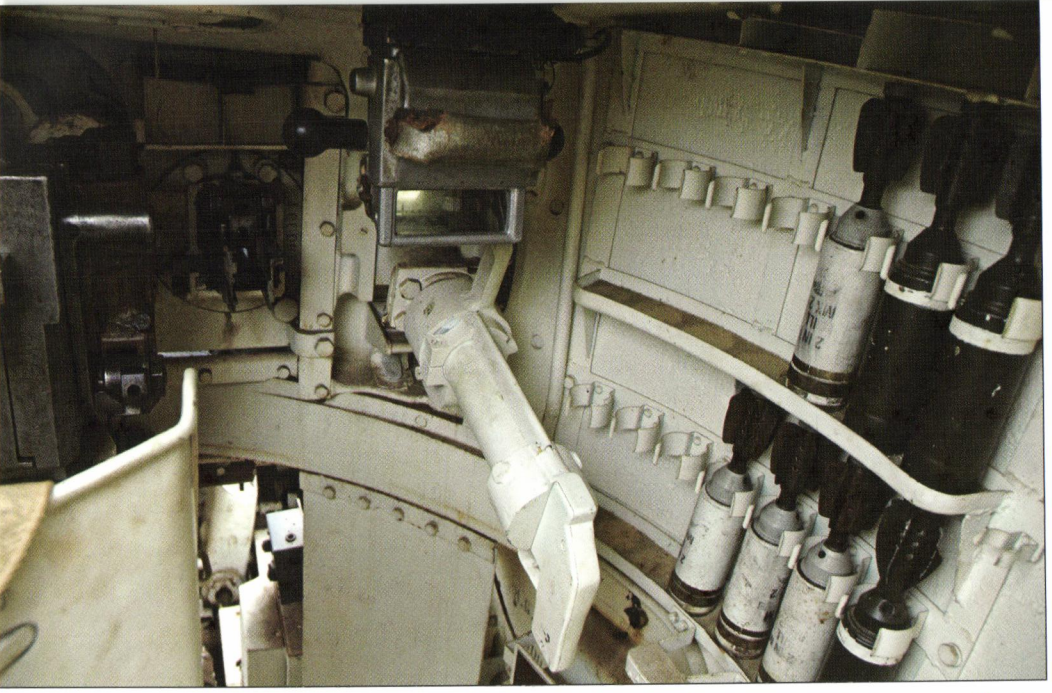


The recoil guard of the main gun is to the top and the No. 19 W/T (wireless transmitter) set is at the bottom of this view down into the turret hatch. Semicircular ammunition racks are visible around the turret floor.

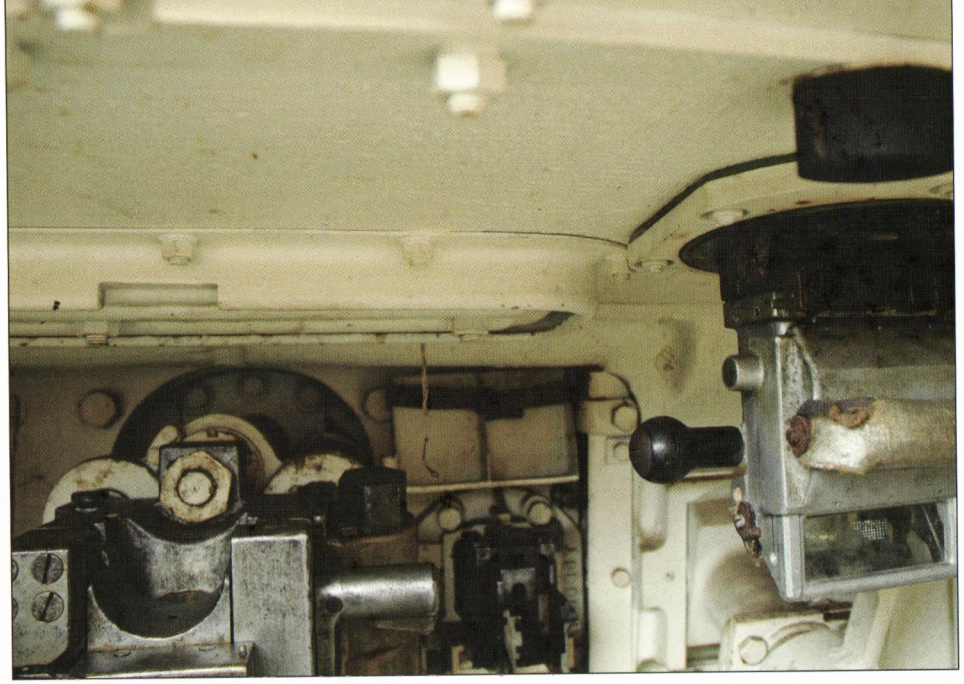
The gunner's, commander's, and loader's seats (left to right) are seen in this view down into the hatch. The recoil guard (top center) could be folded up, to allow more room for movement around the rear of the 2-pounder gun. There was space between the two concentric 2-pounder ammunition racks to store up to 11 ammunition boxes for the Besa coaxial machine gun.

To the left of the 2-pounder gun breech is the gunner's telescope. Below the telescope is the top of the gunner's shoulder yoke, used to adjust the elevation of the gun. Across the top of the photo, bolted to the ceiling of the turret, is the inner portion of the roof ventilator. The black handle with the knob to the right is the left handle of the loader's periscope, which is just out of view.





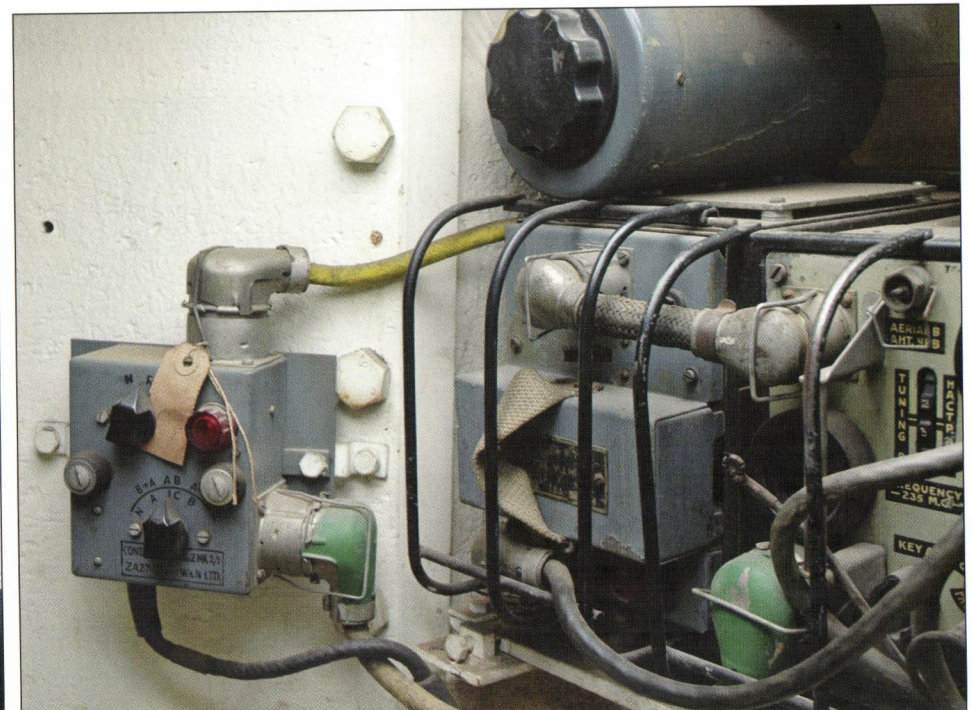
To the right of the 2-pounder gun mount is the 2-inch smoke bomb thrower, with the roof-mounted loader's periscope above it. Spring clips for storing 2-inch bombs are on the right turret wall.

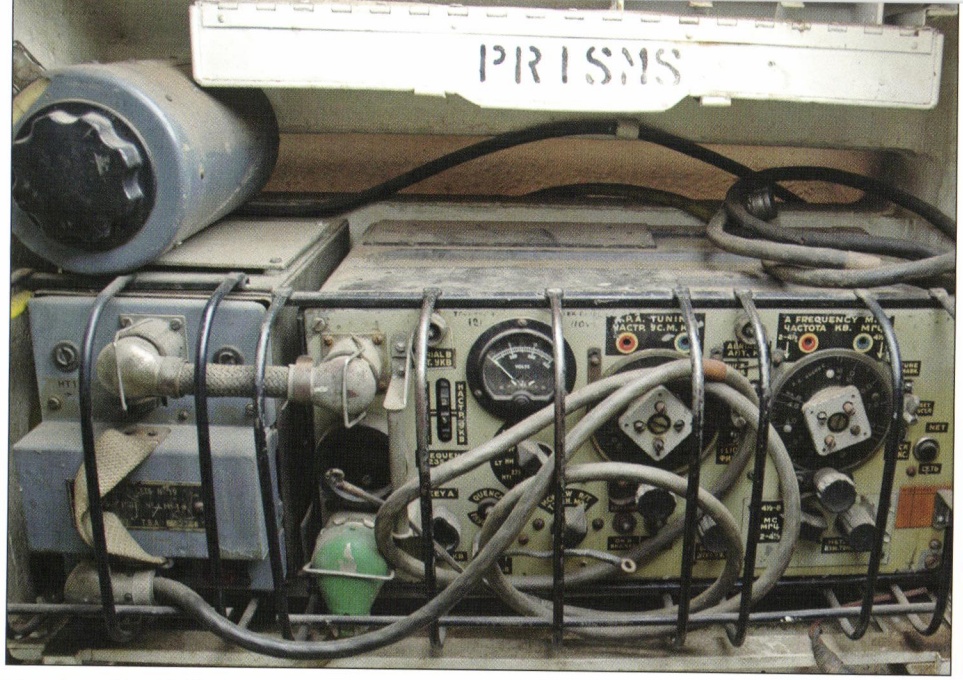


Black knobs on either side of the loader's periscope facilitate rotating the unit. A crash pad is mounted above the viewing aperture of the periscope. The breech operating handle is visible on the right side of the breech.

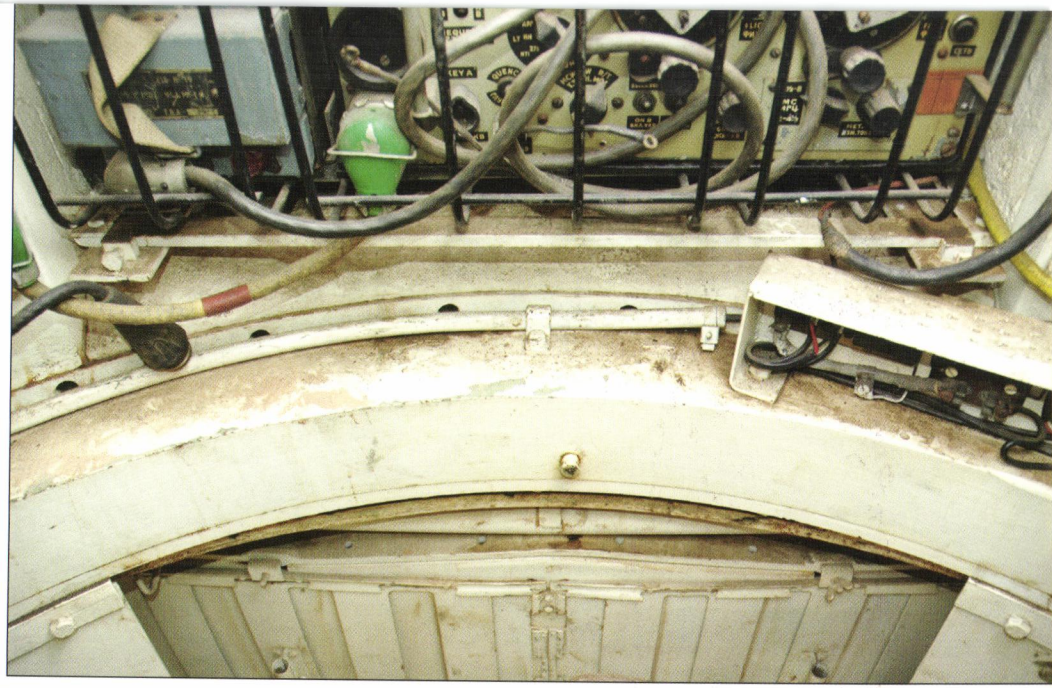
The pistol port actuating lever on the right side of the turret pushes the heavy armor plug upward on its external hinge.

The gray box to the left is the commander's intercom control box. To the right is the right side of the wireless set, with its protective cage.



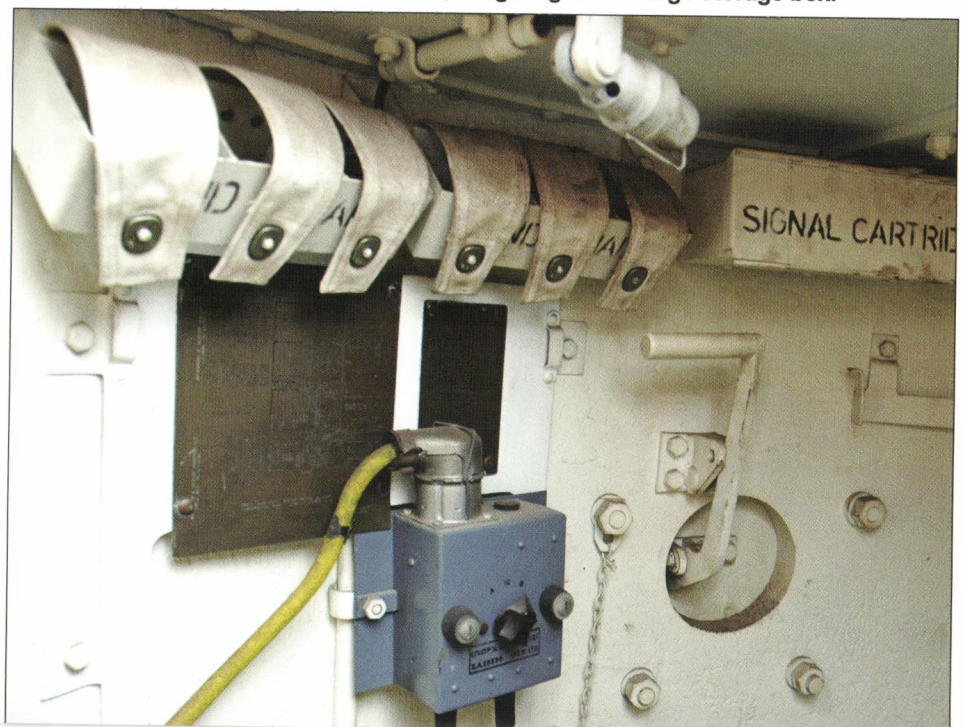


Developed in 1940, the No. 19 wireless set measures 17 1/2 inches wide and 8 1/2 inches high and weighs 40 pounds. On the unit toward the left in the photo is the data plate for the set. Above the set is a box for storing spare periscope prisms.

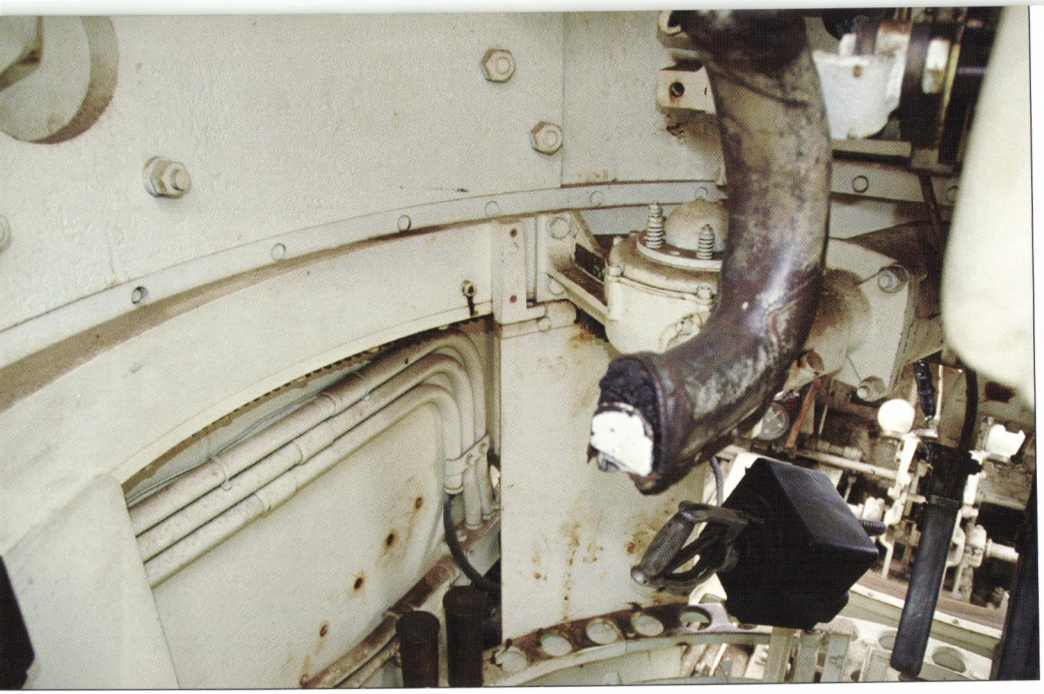


There is an electrical junction box on the turret ring. Below the turret is the rear bulkhead of the fighting compartment.

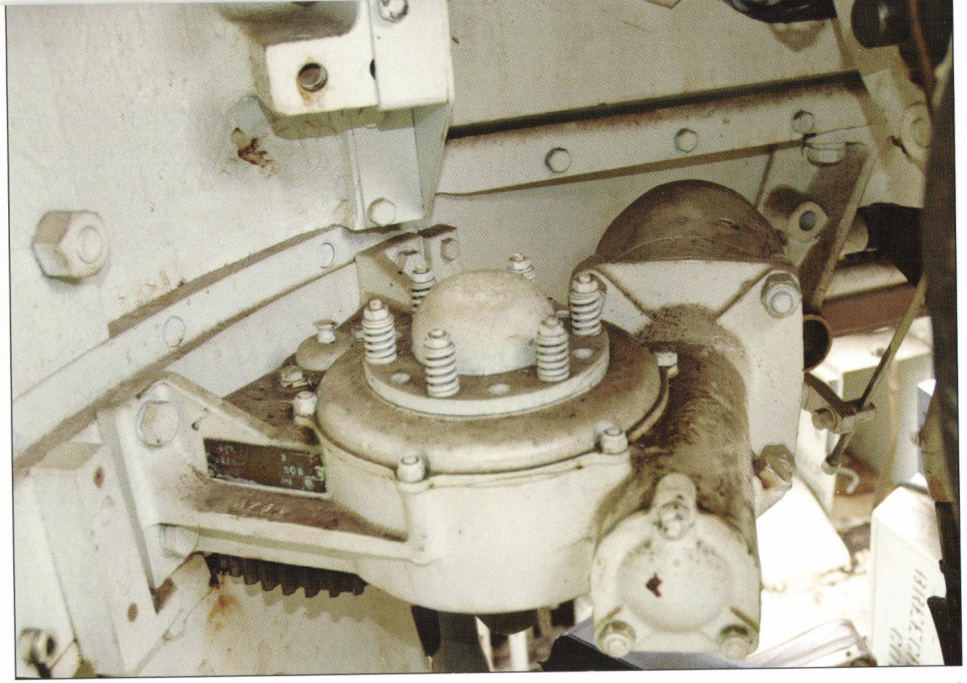
Arrayed on the left turret wall are, left to right, the gunner's intercom control box, the pistol port operating lever, and, above it, a signal gun cartridge storage box.



In this view of the left front corner of the turret interior, the roof ventilator can be seen bolted to the ceiling at the top right. To the lower right is the top of the gunner's shoulder yoke; to the top and right of it is the gunner's sight.



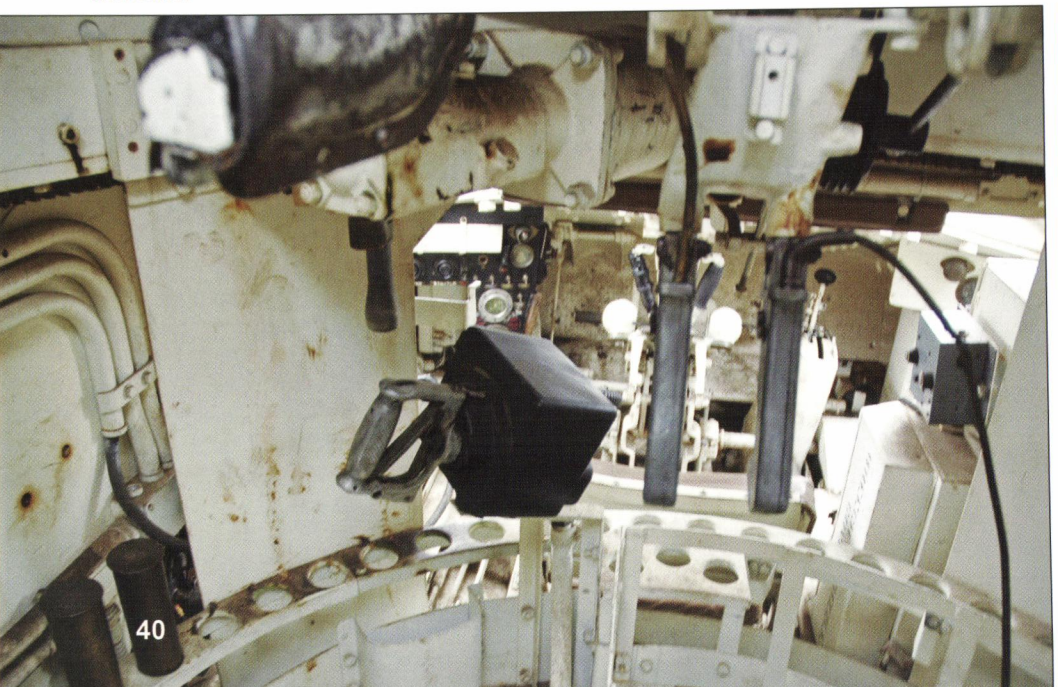
Partly visible to the front of the gunner's shoulder yoke is the traverse gearbox, below which is the black-painted traverse control unit and handle. The driver's compartment is visible through the opening in the turret basket to the lower right.

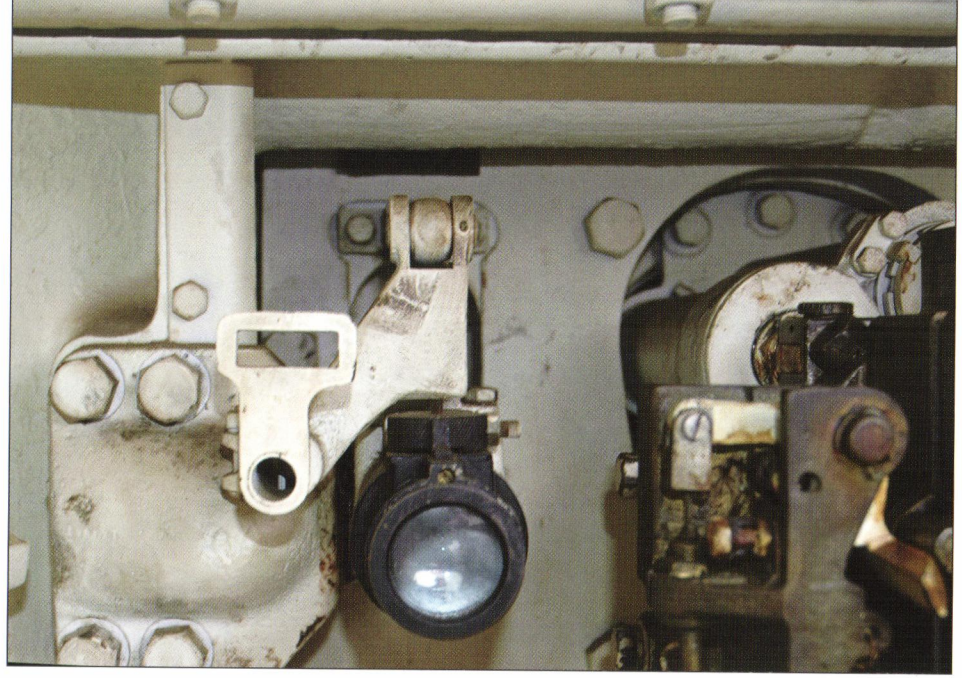


Located to the front of the gunner's position, the traverse gear box could be powered either by a manual hand crank below the gear box when the tank's engine was off, or via an electrical driving motor, seen here incorporated into the right side of the gear box.

The traverse control unit is at the center of the photo. Beyond it is the driver's compartment. To the left, visible through an opening of the turret basket, is the lower hull side.

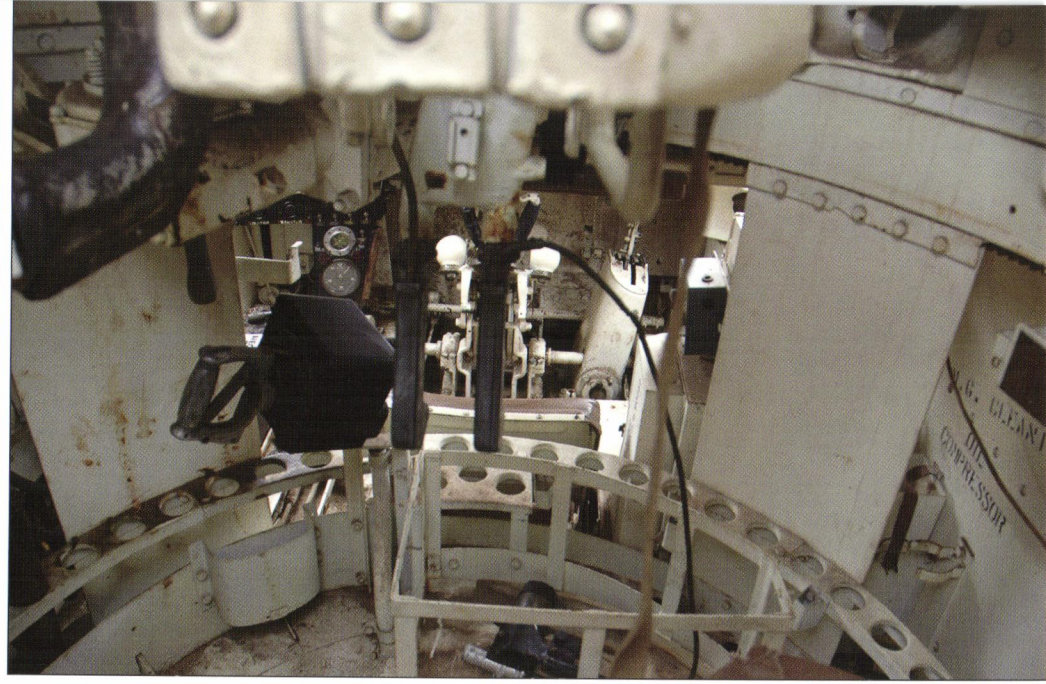
The rack at the lower right, below the traverse control unit and handle, held 2-inch smoke bombs as well as a spare-parts and tools box for both the coaxial machine gun and the Thompson submachine gun.





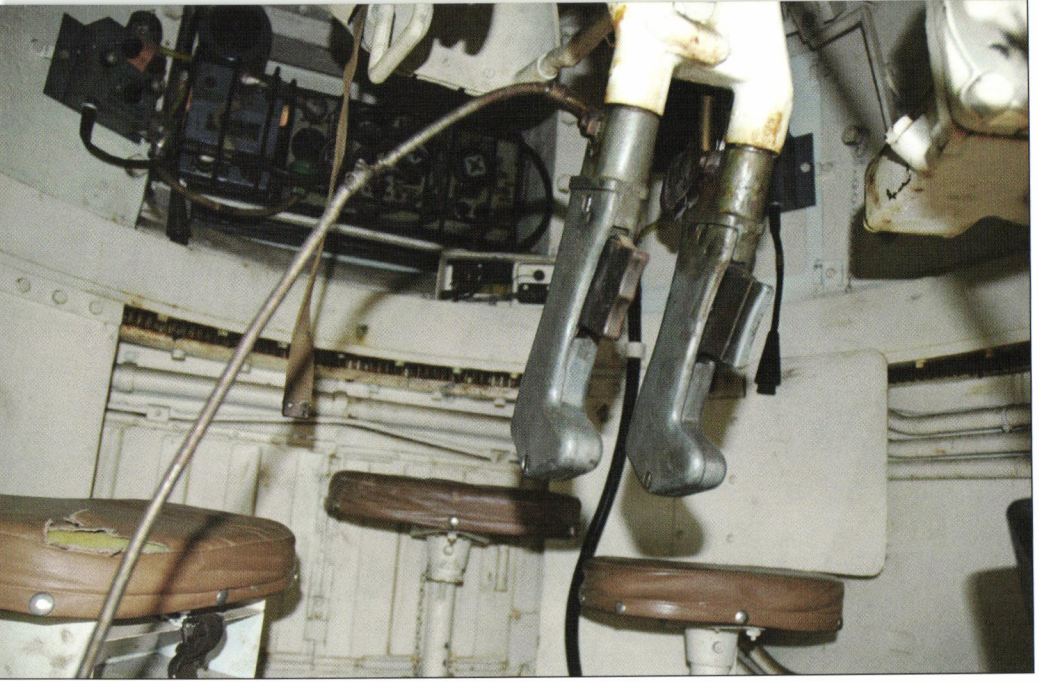
The objective of the gunner's telescopic sight (left of center) is seen next to the breech and recoil cylinder of the 2-pounder main gun (right).

In this photo looking back into the fighting compartment, the 2-pounder ammunition storage racks are at the bottom of the turret basket towards the upper part of the picture, which also shows the back rest of the driver's seat. To the left is a storage container for covers for the breech and muzzle of the 2-pounder gun. To the top, inside the turret basket, is the rack for the machine gun tool box and smoke bombs. To the far right is one of the vertical members of the turret basket.



The driver's compartment can be seen below the breech of the 2-pounder gun. The stenciling on the right marks the stored location of the machine gun cleaning rod. The rack for the machine gun tool box and smoke bombs is at the bottom of the photo to the right of center.

From left to right, the loader's, commander's, and gunner's seats are viewed from the driver's compartment. The rear bulkhead of the fighting compartment is visible through the opening in the turret basket at the center. The bare metal objects at the top right are the firing controls.

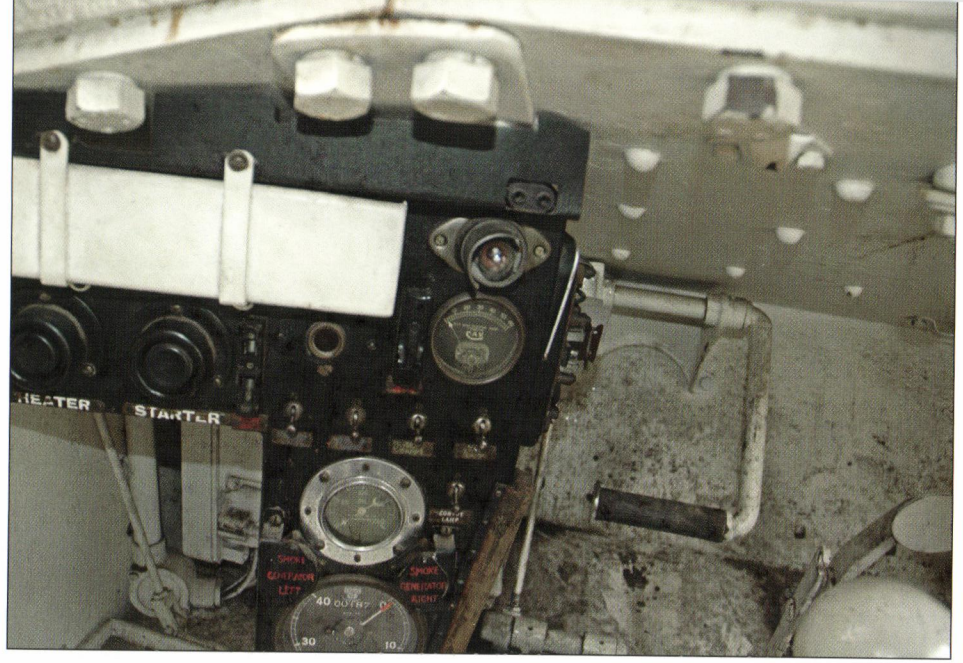


The firing controls are in the foreground of this view from the driver's compartment looking back into the turret. To the top left is the Mk. 19 wireless transmitter set.

The traverse control box (center) is mounted to the turret basket floor. The driver's left door is open at the top right.

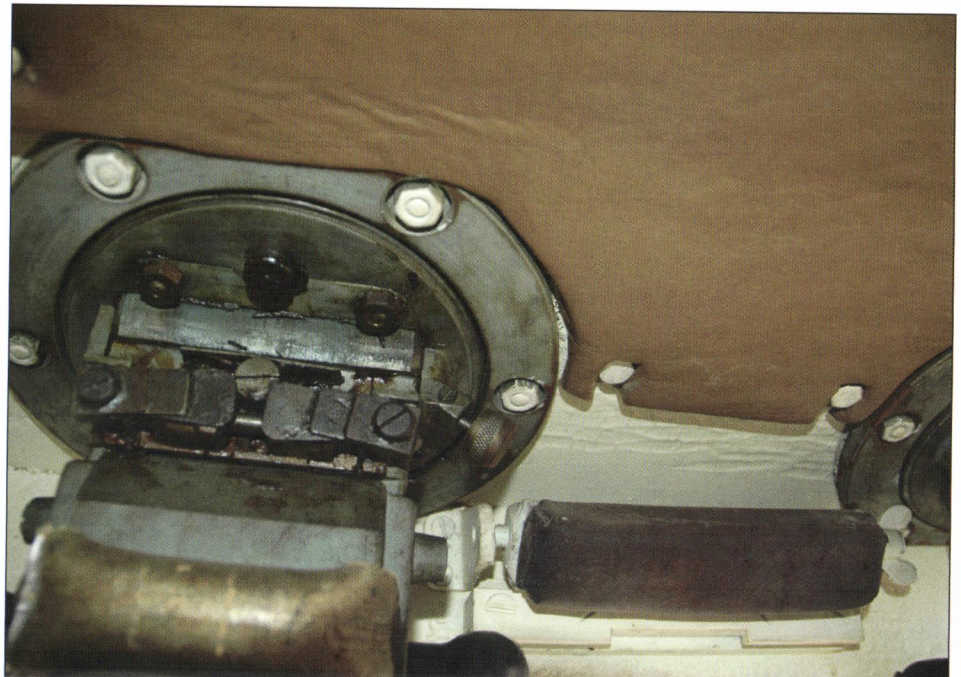
The loader's seat is at the center of this view into the turret basket from the left side of the driver's compartment, while the traverse control box and handle are in the foreground of the picture.

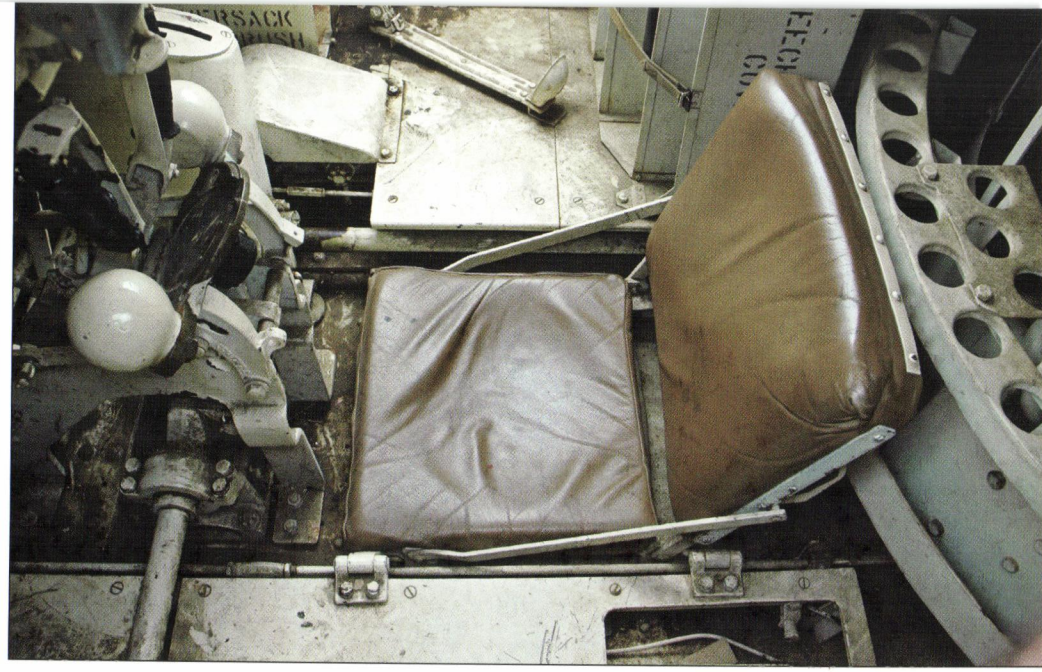
The driver's two periscopes are seen through the open right door. Used in combination with the forward vision port, the periscopes gave the driver a view to the front sides of the path of travel.



The driver's instrument panel is on the left side of the compartment and contains gauges and various switches, including engine starter, heater, right and left smoke generators, and lights. To the right of center is the clutch pedal, and the round object to the lower right is the emergency brake pedal.

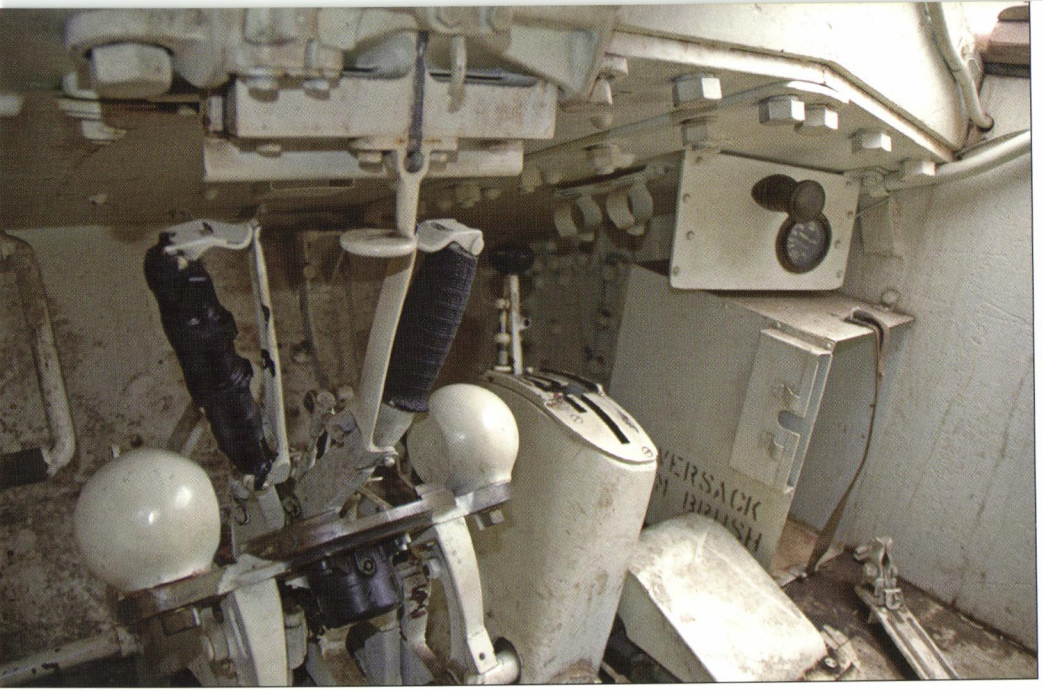
A padded cushion is attached to the ceiling of the driver's compartment to protect the driver's head from jouncing. Details of the periscope's crash pad, turning knobs, and mounting flange are visible.





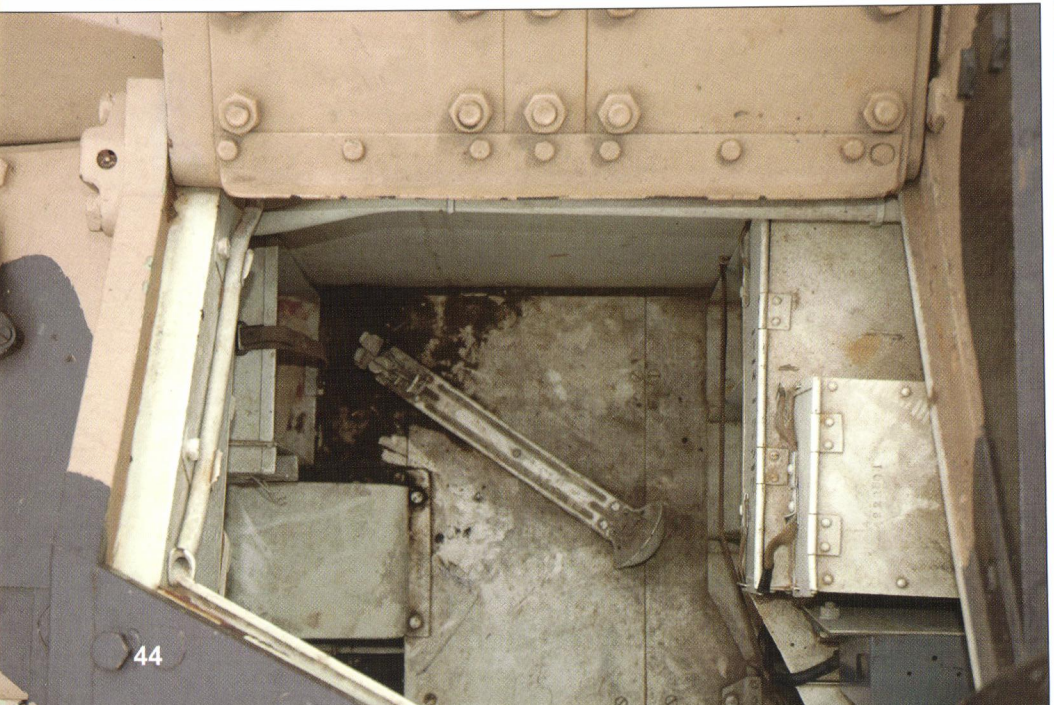
There is a holder for a fire extinguisher at the top center of this view of the driver's seat seen through the left door. Left of the fire extinguisher holder is a bin for storing a haversack. In front of the driver's seat is the binnacle stand, which held a compass.

As viewed from the right side of the driver's compartment, the column toward the right is the transmission gear lever gate. To the left of it is the binnacle stand. The round pedal at center is the auxiliary brake pedal. The instrument panel is partially visible at the far left.



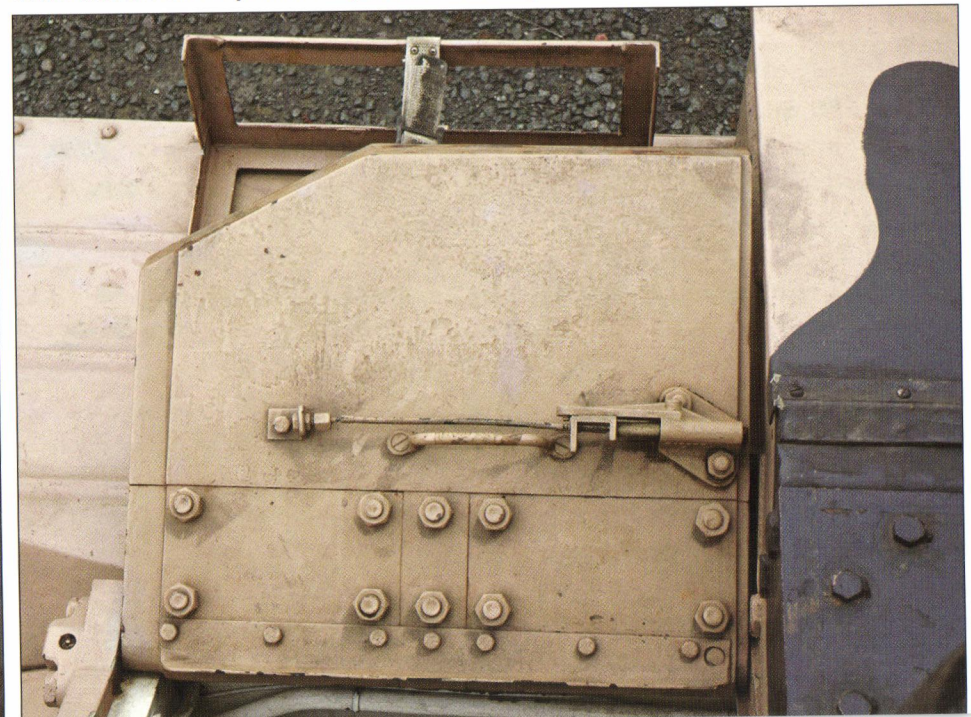
The two black grips of the steering levers are to the front of the binnacle stand. The round clips to the front of the small instrument panel at right held an inspection lamp.

In this view taken through the driver's right hatch from the centerline of the vehicle, the bins to the driver's right rear are to the right, and the fire extinguisher bracket is at the center. The thickness of the vertical plate in front of the driver is apparent.



The small bin near the top of the haversack bin held a periscope brush. The bins to the right of the photo contained the driver's emergency screens; periscope prisms; main-gun breech and muzzle covers; and sets of anti-gas suits, boots, gloves, and hoods.

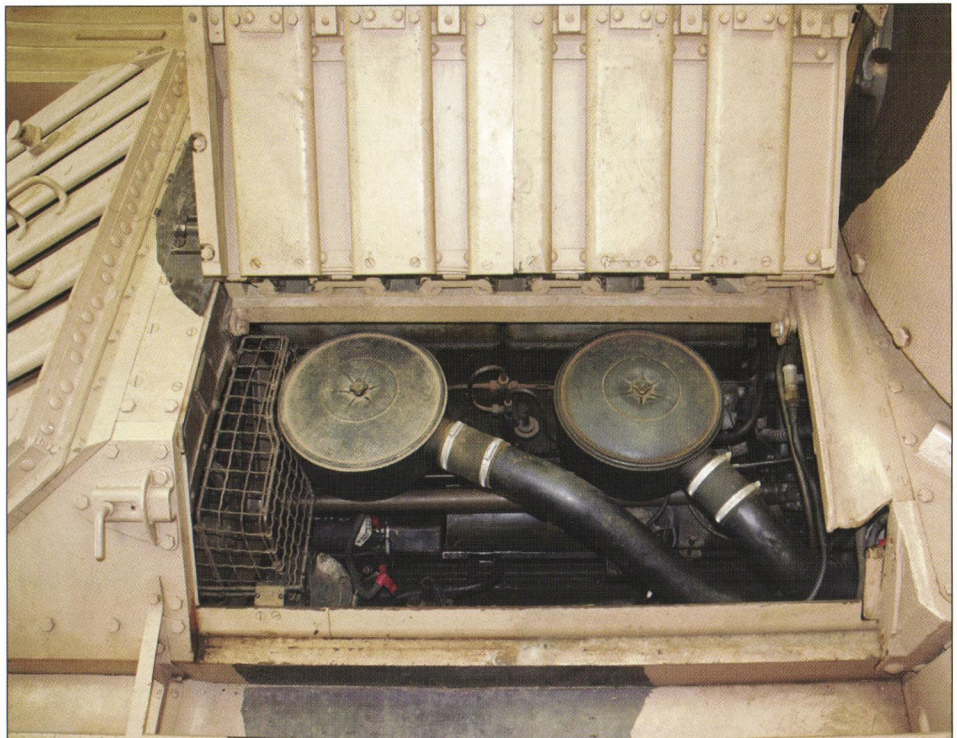
Visible on the interior of the driver's right door are the substantial door latch and the cable that the driver pulled to open the latch. A grab handle is adjacent to the cable.



The baffled design of the two right engine compartment doors is apparent in this view of the open doors taken from the rear.

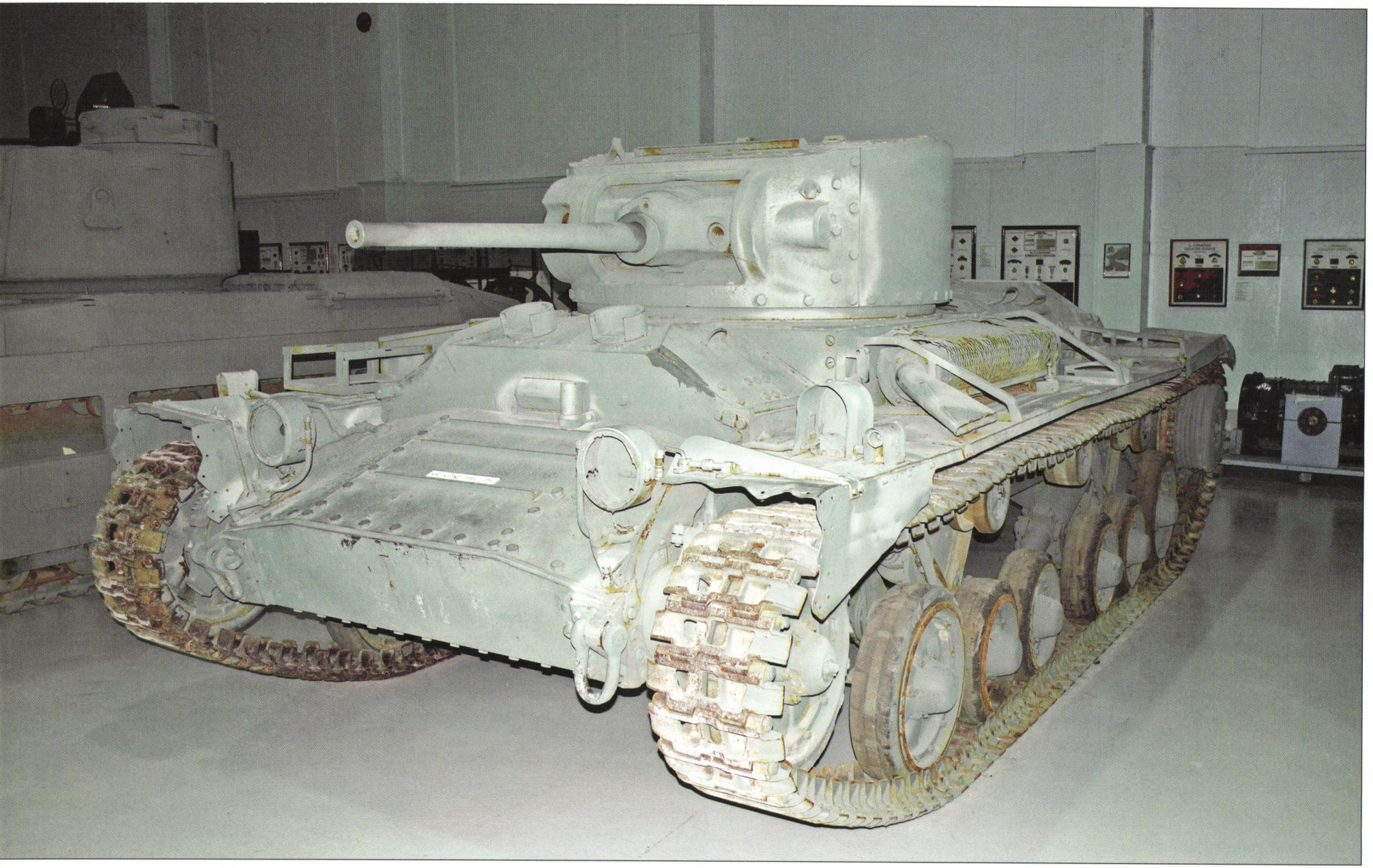
Opening the right side doors of the engine compartment affords access to part of the Valentine engine.

The baffles and part of the engine are visible in this view of the open right side of the engine compartment.

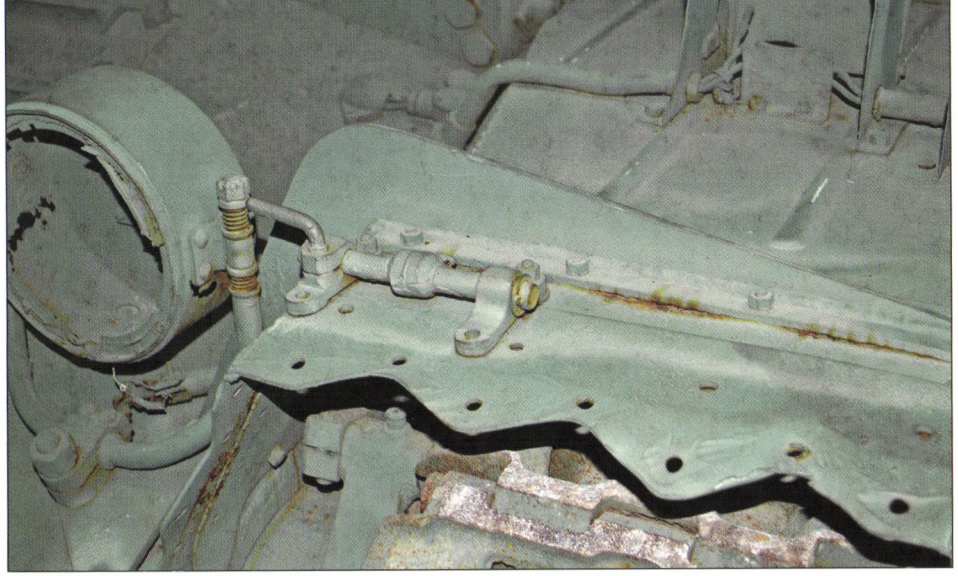


The two left doors of the engine compartment are open, with the front door lying flat and the rear door raised.

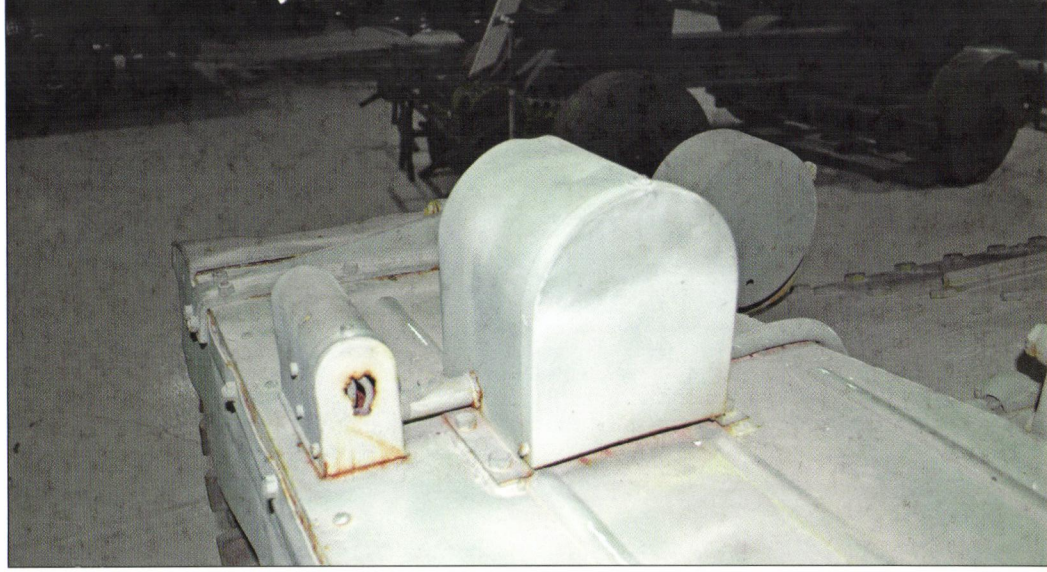
Mark VI



The Valentine Mk. VI is the Canadian-manufactured version of the Valentine Mk. IV. This is a very early example, with a front end fabricated from bolted plates, rather than the cast metal front piece used on later Mk. VI vehicles. This vehicle also has the GMC 6-71 Diesel engine and a two-man turret. (Scott Taylor)



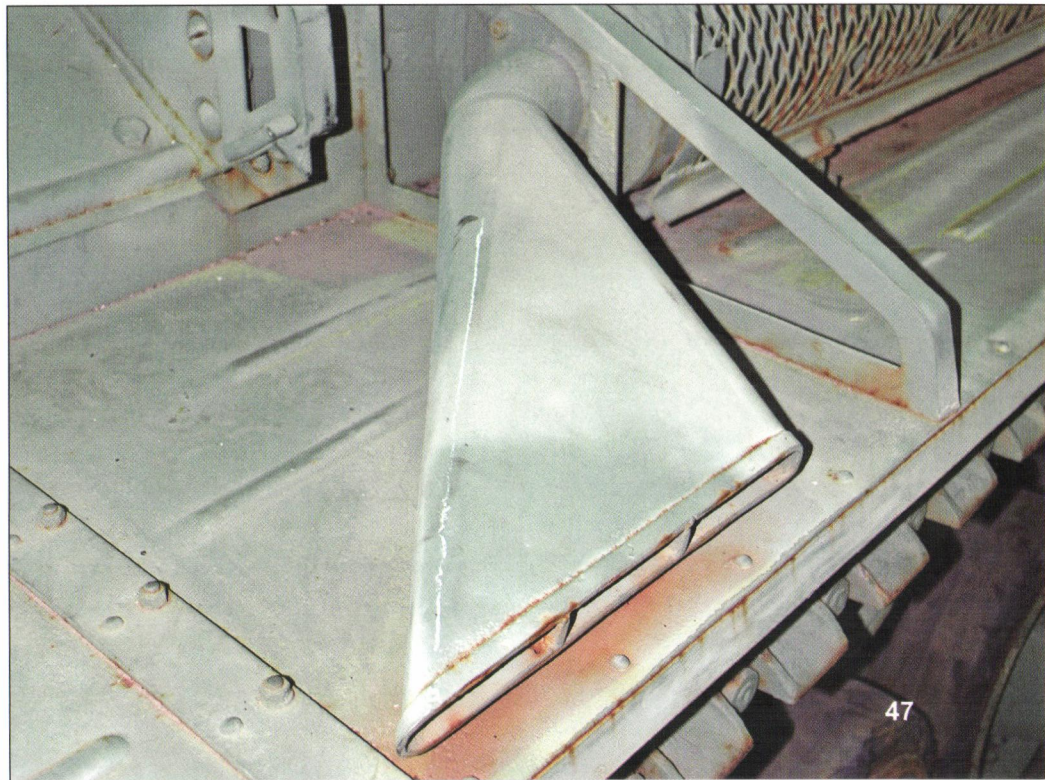
The headlights are still on their sprung, shock-absorbing mounts, but the blackout covers are missing. Also missing are the front fender extensions; their mounting holes on the installed fenders exposed to view. The bracket on the fender held the left driver's rear-view mirror. (Scott Taylor)



Viewed from the rear on the left fender are (left) a side lamp (or marker light) guard and to its right, the guard for a siren, with their electrical conduits. (Scott Taylor)

The driver's left door is in its closed position. The driver's two periscopes are on the top plate over the driver's compartment. (Scott Taylor)

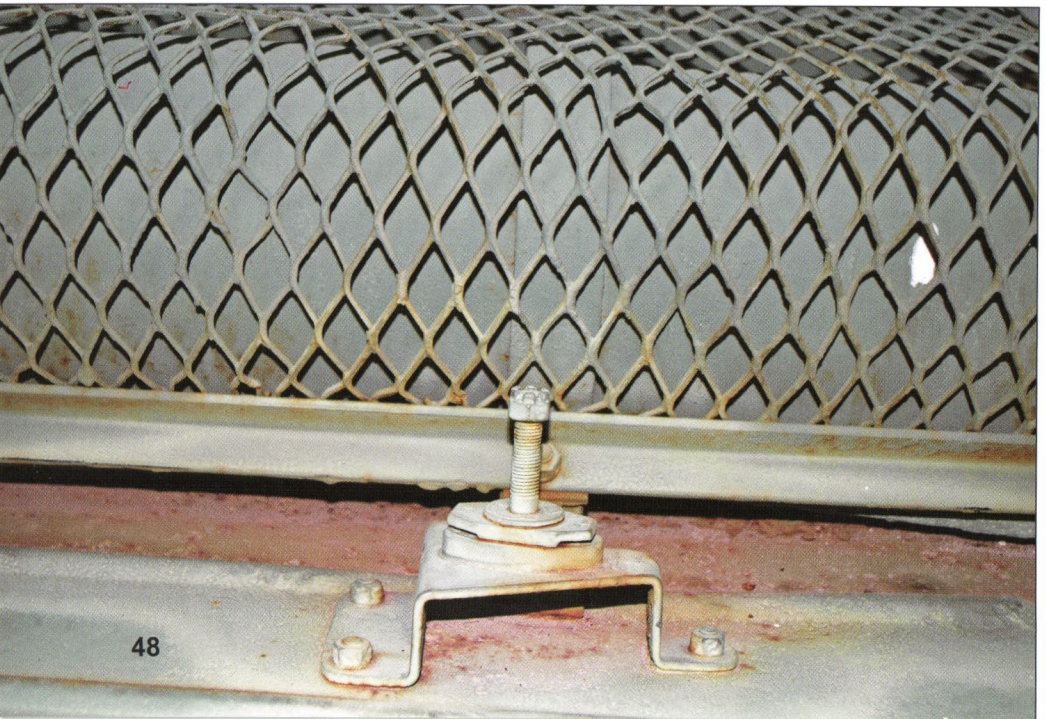
The exhaust outlet rests over the fender to the left of the driver's compartment. The oblong door stop for the driver's left door projects from the side of the front of the fighting compartment. The Valentine was unusual in having its exhaust located to the front of the muffler. (Scott Taylor)



The exhaust outlet incorporates two stiffeners, to prevent the part from being flattened if stepped on. This Valentine Mk. VI has an expanded steel grille for a muffler guard. (Scott Taylor)

There is an angled mounting flange on the bottom of the muffler guard. Towards the front of the exhaust outlet, the front fender support is visible. (Scott Taylor)

On the fender next to the muffler guard is a bracket for storing a pick axe head. The head would be secured in place with the nut and the large washer. (Scott Taylor)



Mounted on the fender to the rear of the fender support is the front bracket for storing a shovel and a crowbar. To the right is the exhaust elbow. Further details of the expanded-steel and angle-iron construction of the muffler guard are visible. (Scott Taylor)

Similar to the Valentines Mk. I and II, the Mk. VI has separate top and side engine compartment doors—two of each. The top doors are hinged near the centerline of the tank, while the lower doors are hinged on their bottoms, as seen here. Between two of the hinges is a small, rectangular fender support. (Scott Taylor)

Between the two large fender supports is a clamping-type bracket for the shovel handle and crow bar. The inner edge of the fender is cut out to give clearance to the bottoms of the hinges of the lower engine compartment doors. (Scott Taylor)

The characteristic upward sweep of the Valentine fender is apparent at the center of the photo, to the left of the large fender support. To the far right is a bracket for a set of track tongs. (Scott Taylor)

In this left-rear three-quarter view, the mounting holes for the screws that held the rear fender extensions in place are visible on the rear of the fenders. The final-drive access door is ajar, and the distinctive shape of the rear of the turret bustle, with the drooping protrusion, is apparent. (Scott Taylor)

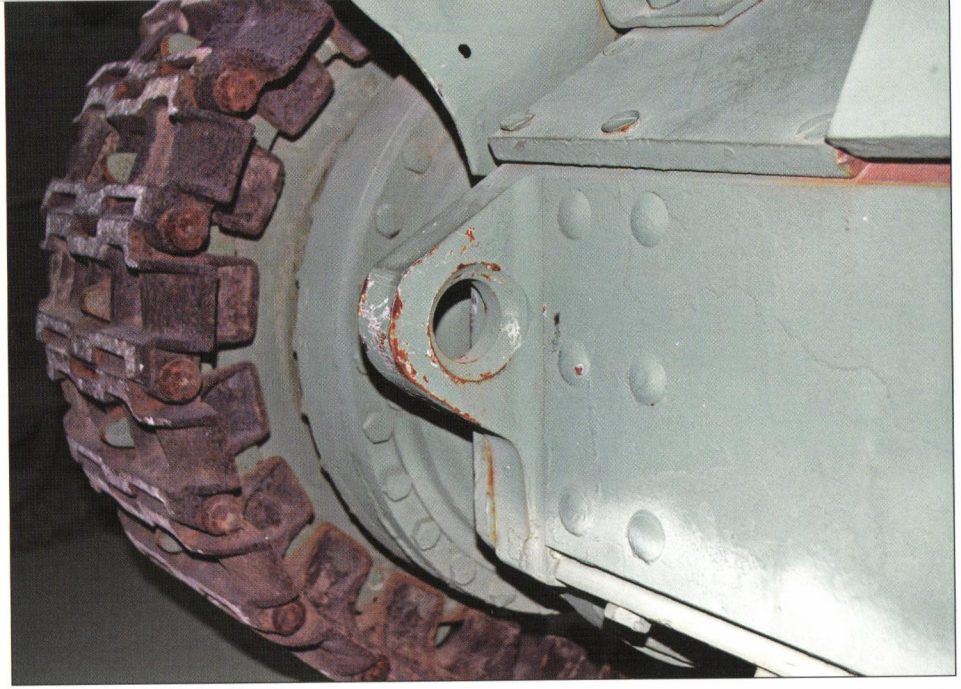
The lower plate of the rear of the hull of this vehicle is relatively uncluttered, lacking the towing pintle installed on some Valentines. Although the hold-down brackets are installed on both of the radiator doors, the struts that engaged the brackets to hold open those doors are missing from the rears of the fenders. (Scott Taylor)

This view illustrates the layout of the lifting handles on the radiator doors and, at the bottom, the final-drive access door. The bolt-head patterns on the raised louvers of the radiator doors are evident. (Scott Taylor)

The bottom of the hinges for the final-drive access door are attached to the hull with hex bolts, while the upper leaves of the hinges are fastened to the door with rivets. (Scott Taylor)

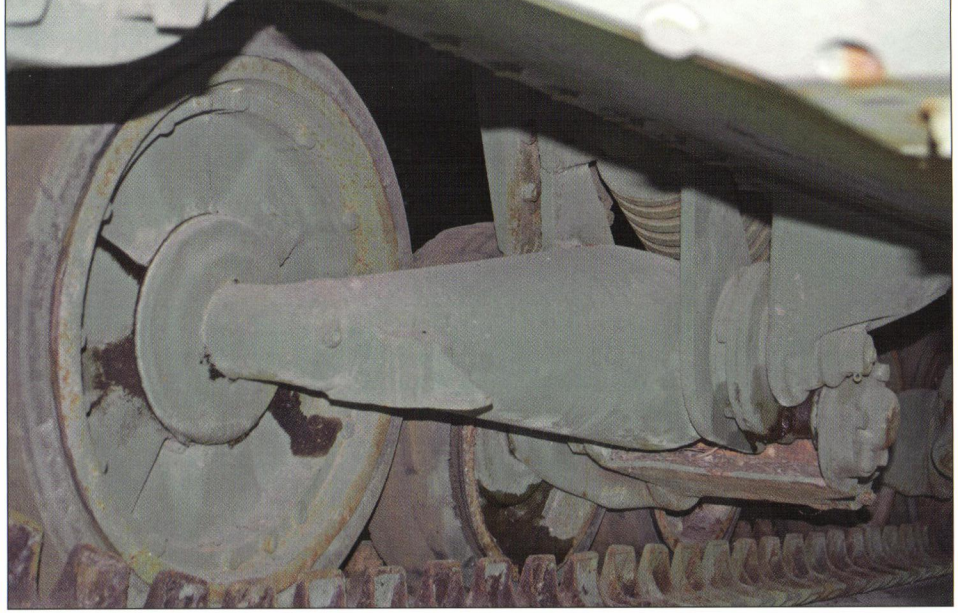
The lower or rear hinge of the left radiator door is viewed from the rear. The left fender is to the left. (Scott Taylor)

At the right rear corner of the deck to the right of the final-drive access door is a tail light (lower right). Above it are a fender support and the rear hinge of the right radiator door, with the rear of the right fender to the upper right. (Scott Taylor)



On both sides of the rear plate of the lower hull are towing eyes; this is the left one. To the left of it is the final drive housing with hex bolts surrounding its perimeter. (Scott Taylor)

The left final-drive housing and inside of the drive sprocket are seen from below the center rear of the Valentine Mk. VI. (Scott Taylor)

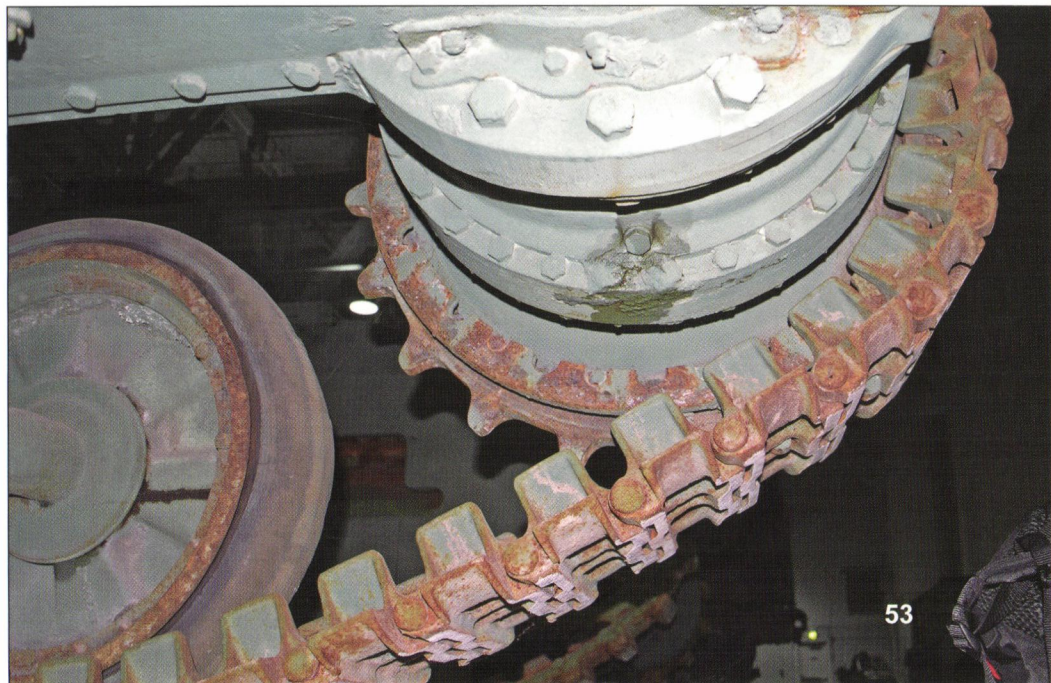


The inner features of the left rear bogie assembly are seen from the center of the rear of the tank. The rear bogie wheel (left) is mounted on the suspension arm, and part of the helical suspension spring is visible. Each bogie unit holds two small bogie wheels, one large wheel, and a track support roller. (Scott Taylor)

The bottom of the hull is photographed from the rear of the Valentine Mk. VI. The bogie frames, which support the bogie arms and track support roller, are bolted to the lower hull. (Scott Taylor)

The inner mounting flange of the right rear bogie assembly is to the left of center of the photo; this flange is bolted to the bottom of the hull. (The main frame of the bogie assembly is bolted to the side of the hull.) Located near the rear of the suspension arm is the travel stop, which limited the upward movement of the arm. (Scott Taylor)

The bogie wheels are the closed-spoke type. There is lubricant stain around the final-drive drain plug. Also, the rust patterns on the bogie wheels and the drive sprocket indicate where the operation of the tank rubbed paint off the steel of the wheels and sprocket. The manganese-steel tracks would not likely have been this rusty during service in World War II. (Scott Taylor)



The outer edges of the opening in the rear towing eye are beveled, while the center part is at a right angle to the outer surface of the plate. (Scott Taylor)

The Valentine Mk. VI has one storage box on the right fender. In service, much of the rest of the fender would have been occupied by various tools and implements, spare track shoes, and tow ropes. (Scott Taylor)

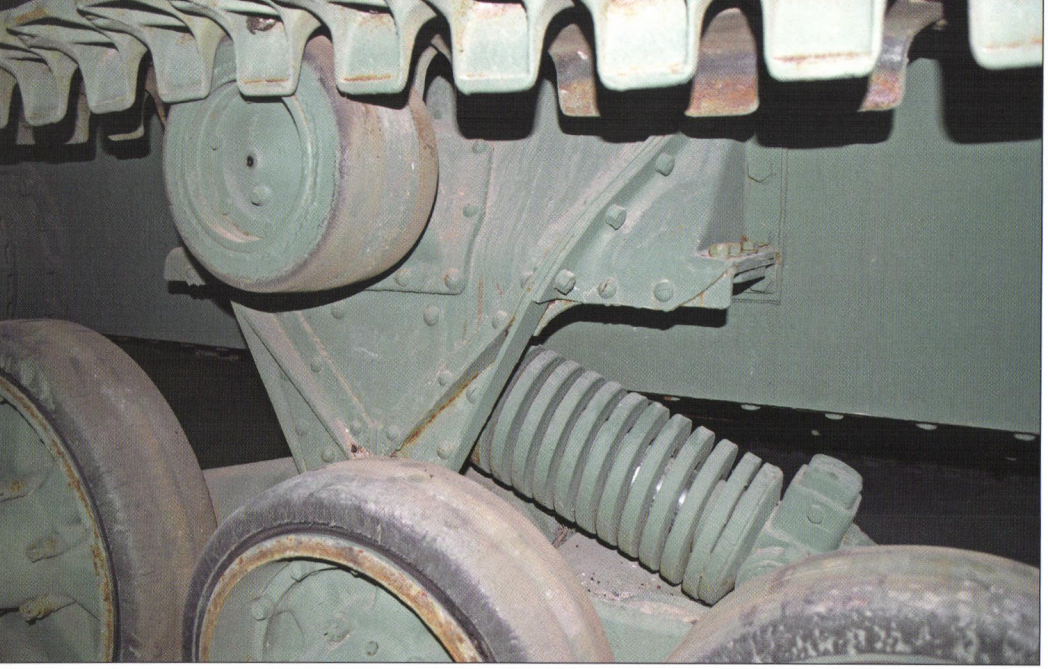
Several hex bolts are missing from the hubcap, as seen in this side view of the right drive sprocket. The bolts are arranged in tight groups of threes, with more spaced groups of twos between. (Scott Taylor)

The ridged outer drum of the right drive sprocket is seen in a three-quarters rear view. (Scott Taylor)

The right drive sprocket is viewed in profile from the front. (Scott Taylor)

The track support roller on the right rear bogie assembly is seen from the side. (Scott Taylor)

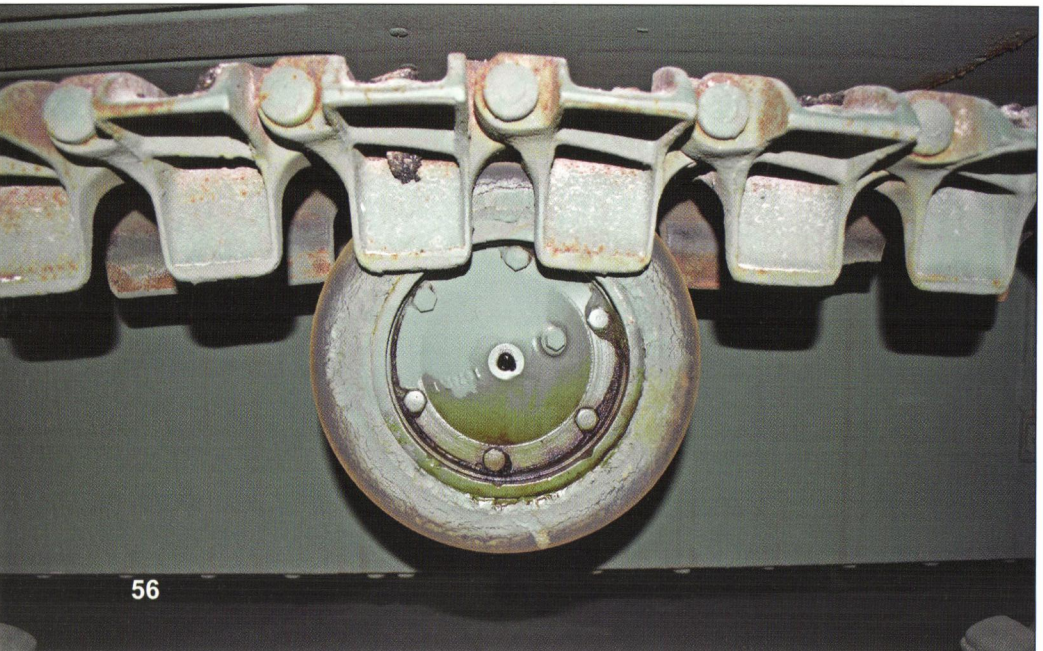
The bogie assemblies incorporate track support rollers (or return rollers); the roller assembly of the right rear bogie is at the top right. There is green paint overspray on the roller's rubber tire. (Scott Taylor)



The material of the helical suspension spring is of square, rather than round, profile, as seen in this front three-quarters view of the right rear bogie frame and roller. (Scott Taylor)

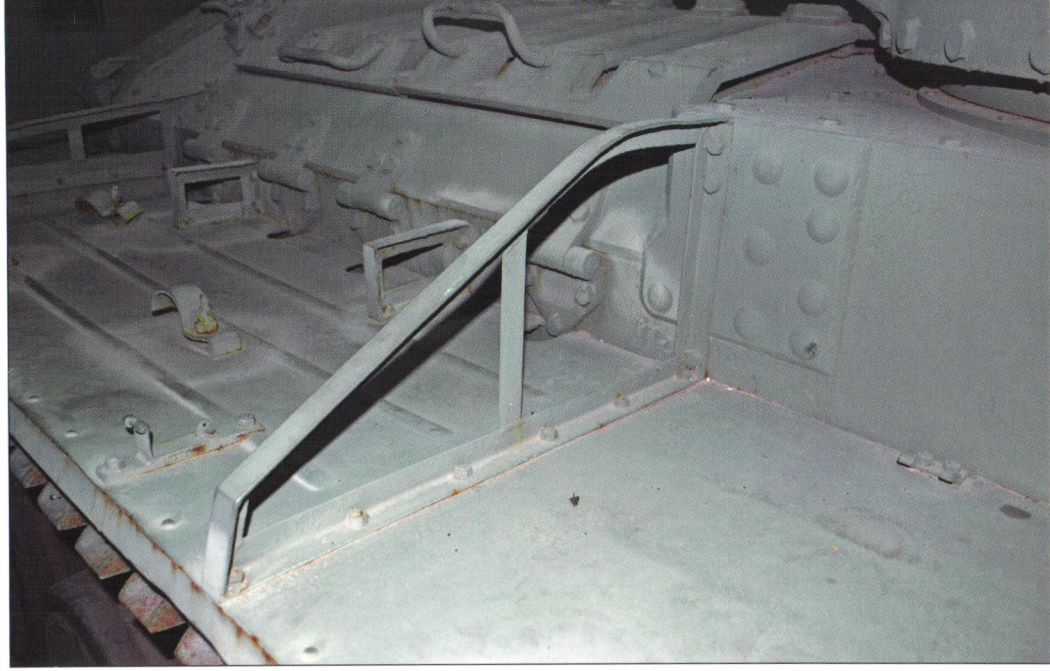
Between the bogie assemblies is a center track support roller, mounted on a support bolted to the hull. To the lower right is the suspension spring of the front right bogie assembly; a shock absorber extends through the inside of the spring. (Scott Taylor)

Lubricant has leaked copiously from the hub of the center roller. The part number, 16742T, appears in raised letters on the hubcap. At first sight, the rollers appear to be entirely of painted steel, with paint rubbed off the rims, but in fact the rollers have rubber tires, whose sides have been oversprayed with green paint. (Scott Taylor)



The radiator doors of the Valentine Mk. VI are seen in detail in this view from the right rear of the vehicle. The forward, or upper, hinge of the right door is toward the lower right. Directly below it there is a cutout in the fender to give clearance to the hinge. (Scott Taylor)

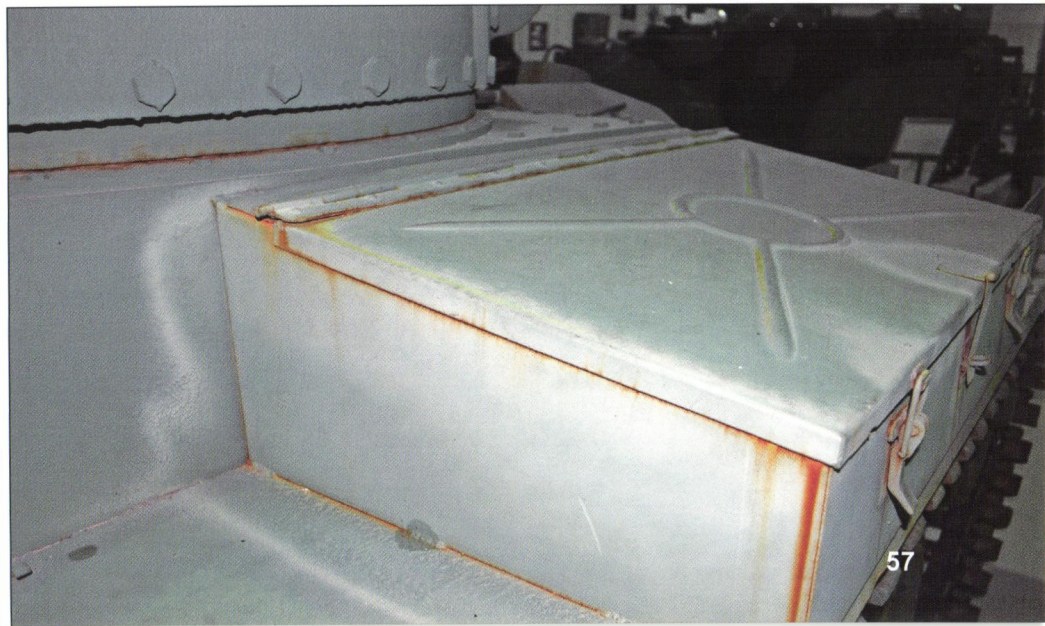
The right engine compartment doors are seen here with the radiator doors to the left and the turret to the right. The louvered construction of the upper doors facilitates ventilation of the engine compartment. The dead bolt latch, present only on the right side of the vehicle, is toward the lower left. (Scott Taylor)



The fender support brackets are fabricated from angle irons and are interchangeable on either side of the vehicle. The brackets on the right side of the tank have the inside of the angle facing forward, as seen here, while the angle on the brackets on the vehicle's left side face towards the rear. (Scott Taylor)

The space on the right fender between the stowage box and fender support was often used for storing spare track shoes. Where the bracket is fastened to the hull, there is a reinforcing plate also attached to the hull. The two right corners of the plate are square, while the lower left corner is rounded. (Scott Taylor)

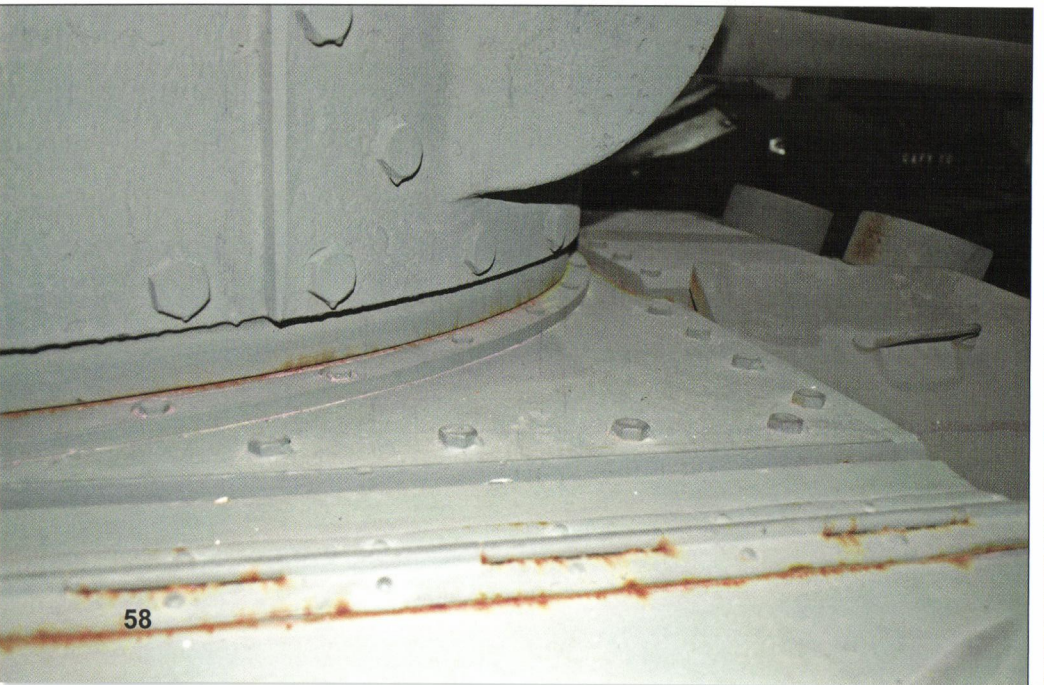
The storage box on the right fender is fabricated from sheet metal, with a piano hinge on the inner edge of the lid. A variety of tools and goods, from great coats and haversacks to a sledgehammer, wire cutters, and a portable stove, were stowed in the box. (Scott Taylor)



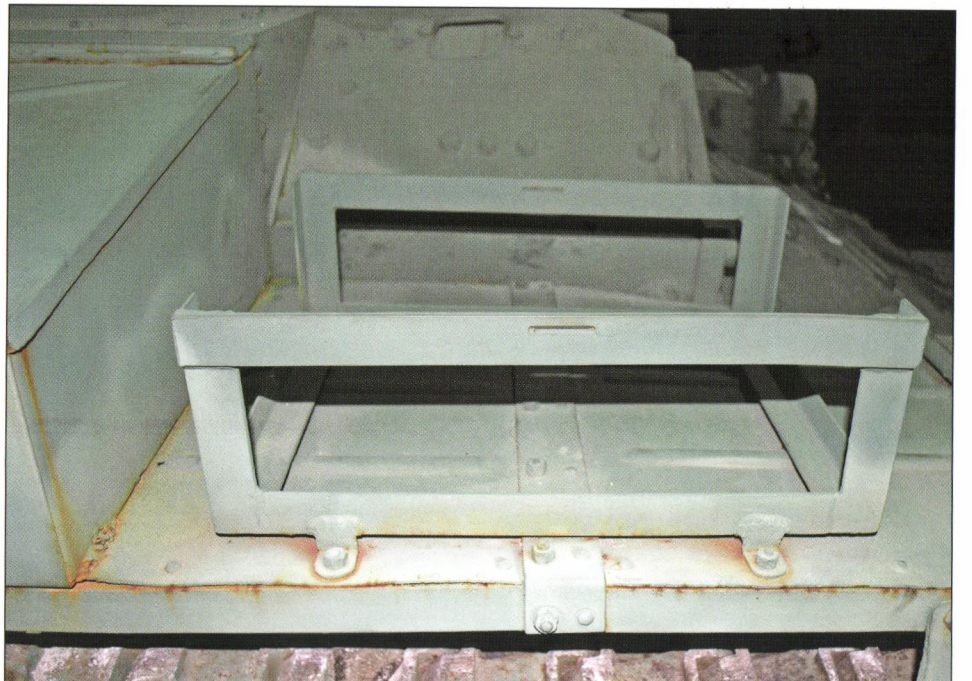
Ridges for strengthening are embossed in the lid of the storage box. Two latches and a padlock hasp secure the lid shut. (Scott Taylor)

The bottom of the right-fender storage box, seen here from the front, is tack-welded to the fender. (Scott Taylor)

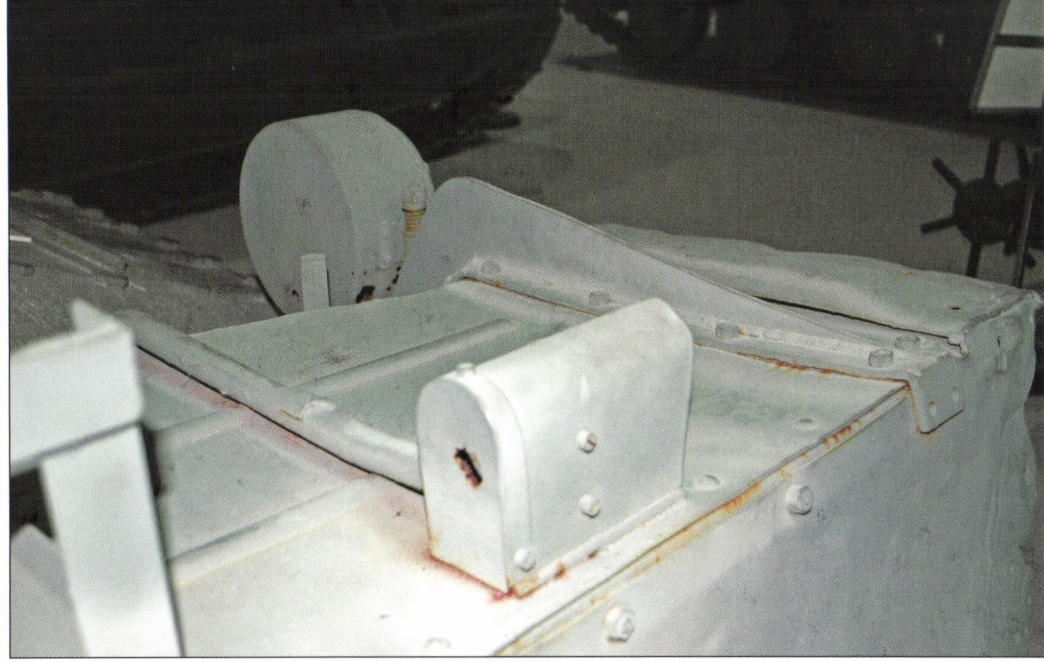
The bottoms of the turret and mantlet are bolted to the turret head, as the British called the base of the turret structure. The vertical design of the turret, coupled with the lack of a splash guard around the base of the turret, made this area quite vulnerable to projectiles. (Scott Taylor)



Immediately to the front of the right-fender storage box is a rack fabricated from welded angle irons. It held a large and a small wooden block, which were placed under the jack when lifting the vehicle or the suspension components. The metal strip below the stowage rack joins two fender sections together. (Scott Taylor)

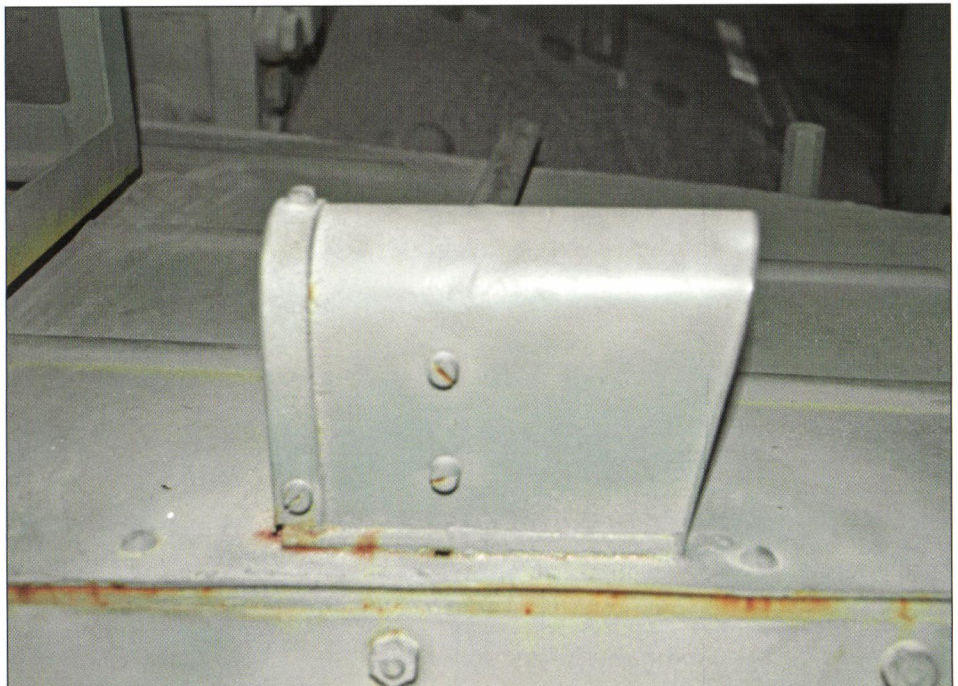


To the right of the jack-block rack is the driver's right door. At the bottom center is the right side lamp guard and the lamp's electrical conduit. On this vehicle, the conduits are smooth pipes, fitted to the contours of the fenders. Some Valentines had ribbed or flex conduits. (Scott Taylor)

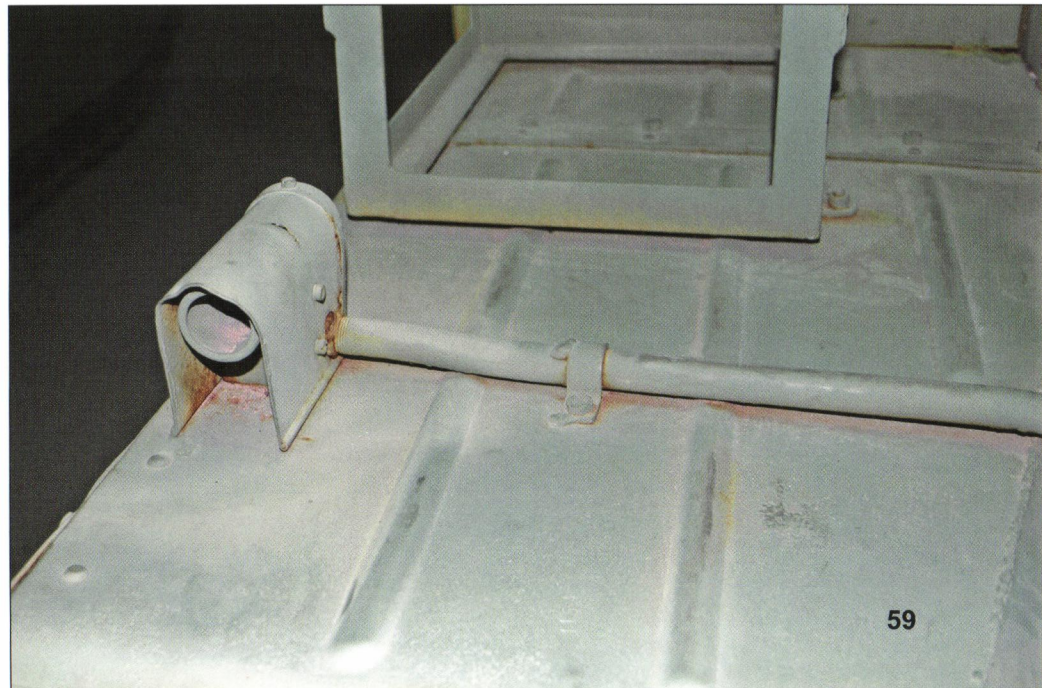


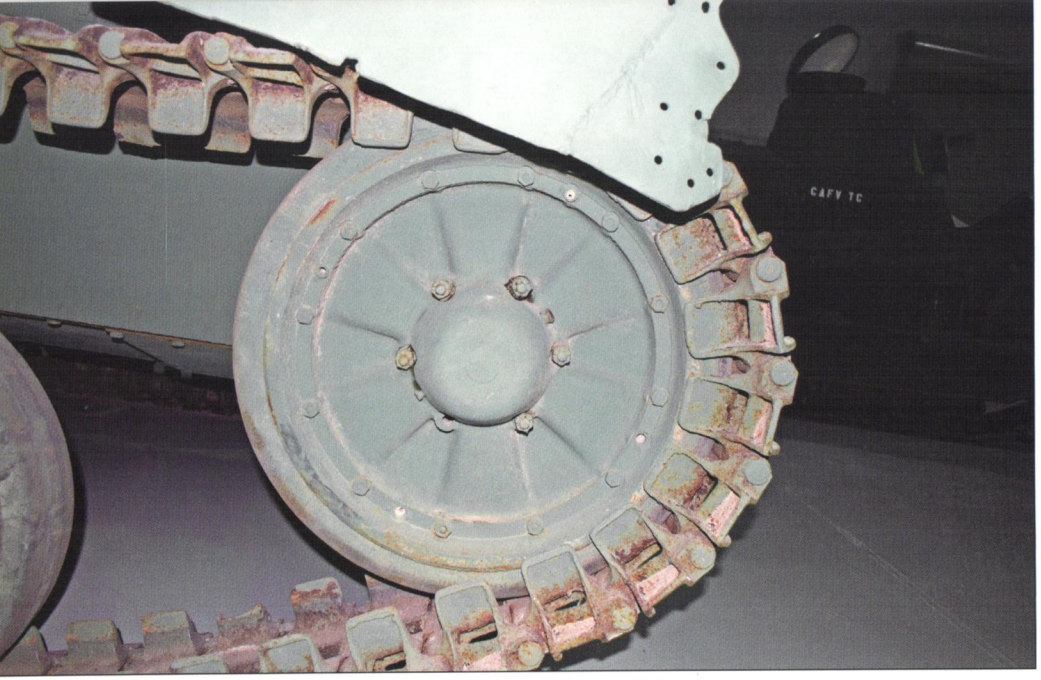
The right side lamp guard and the front fender support are seen from the rear. To the left of the fender support is the back of the right headlight can. This headlight can has a drum shape, rather than the rounded design found on some Valentines, such as the Mk. III. (Scott Taylor)

As seen in this side view of the right side lamp guard, the back of the lamp guard is attached to the hood with three large, slotted screws. (Scott Taylor)



The right side lamp is inside its guard as seen in this view from the front. A single bracket with a hex bolt at the front secures the conduit to the fender. (Scott Taylor)

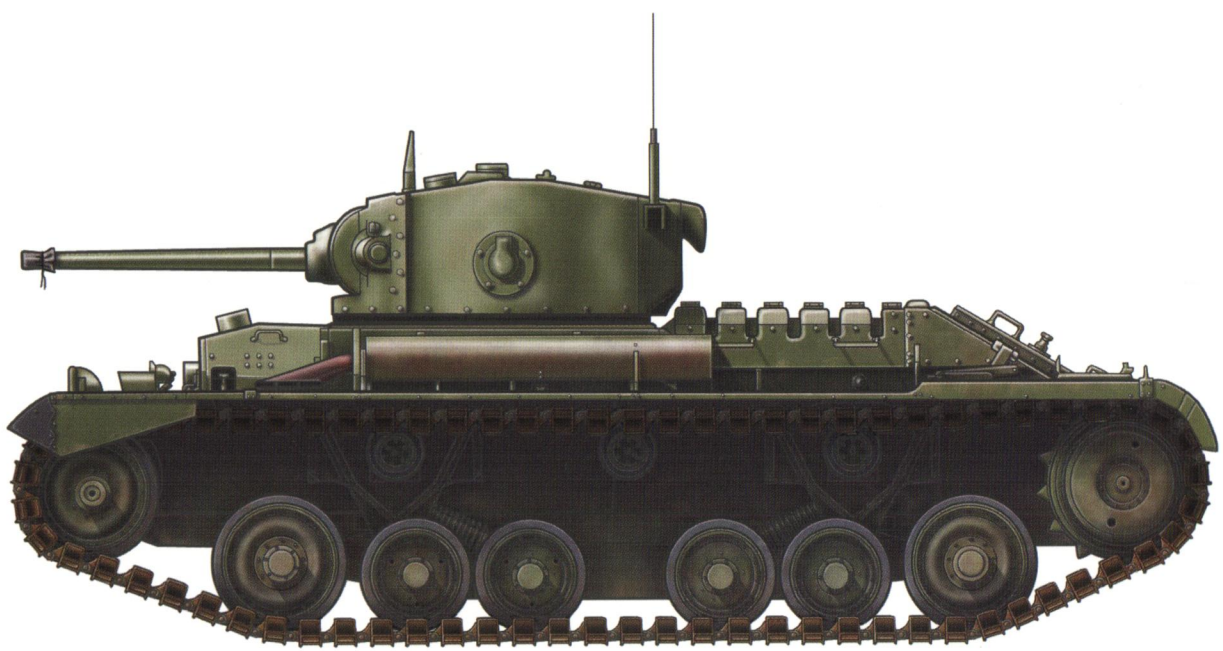


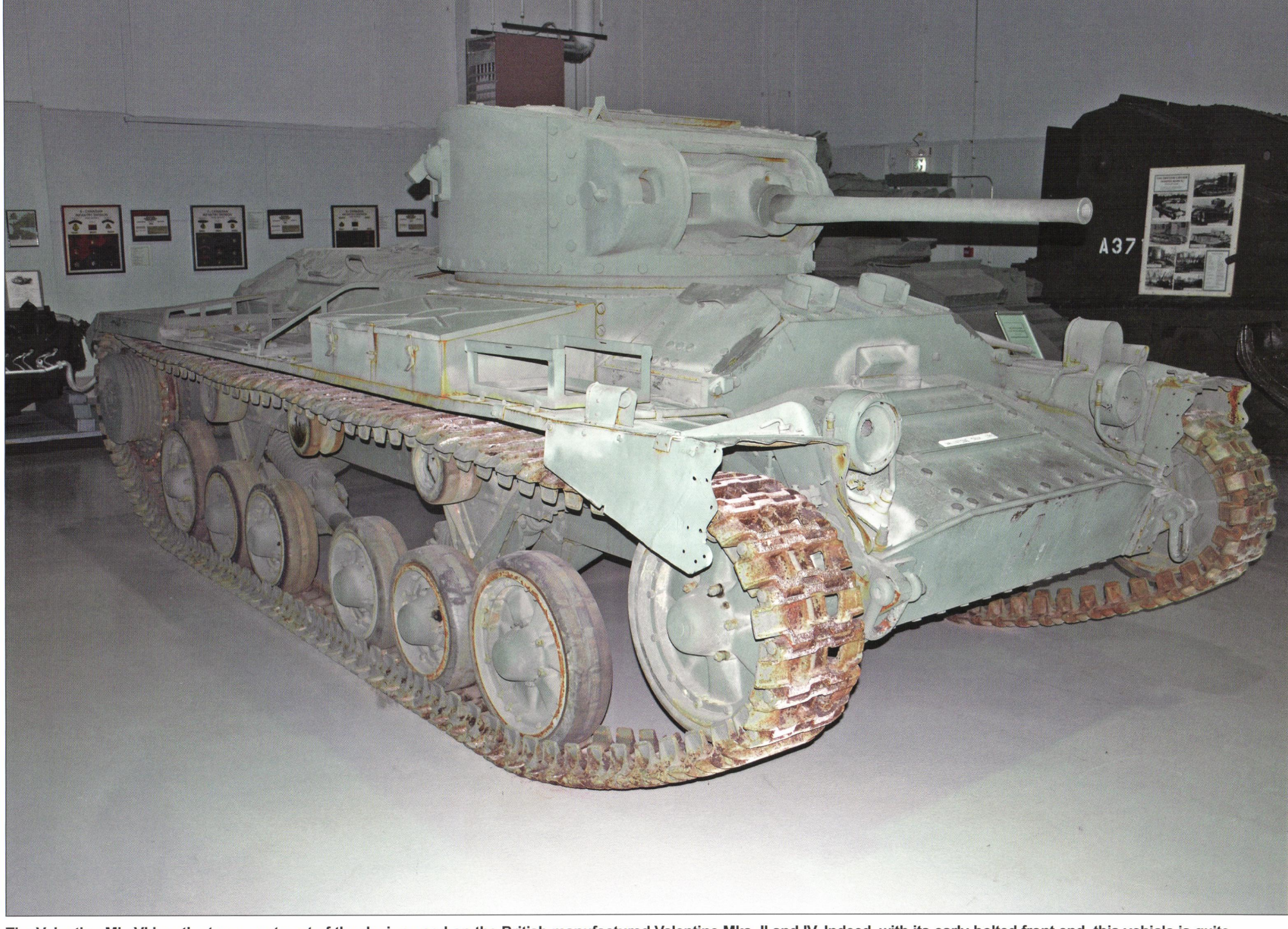


Located at the front of the vehicle, the idler wheels are of solid-spoked design. The hub of this one lacks one of the locking hex nuts. A grease fitting and a relief valve can be seen on the side of the hub cover. (Scott Taylor)

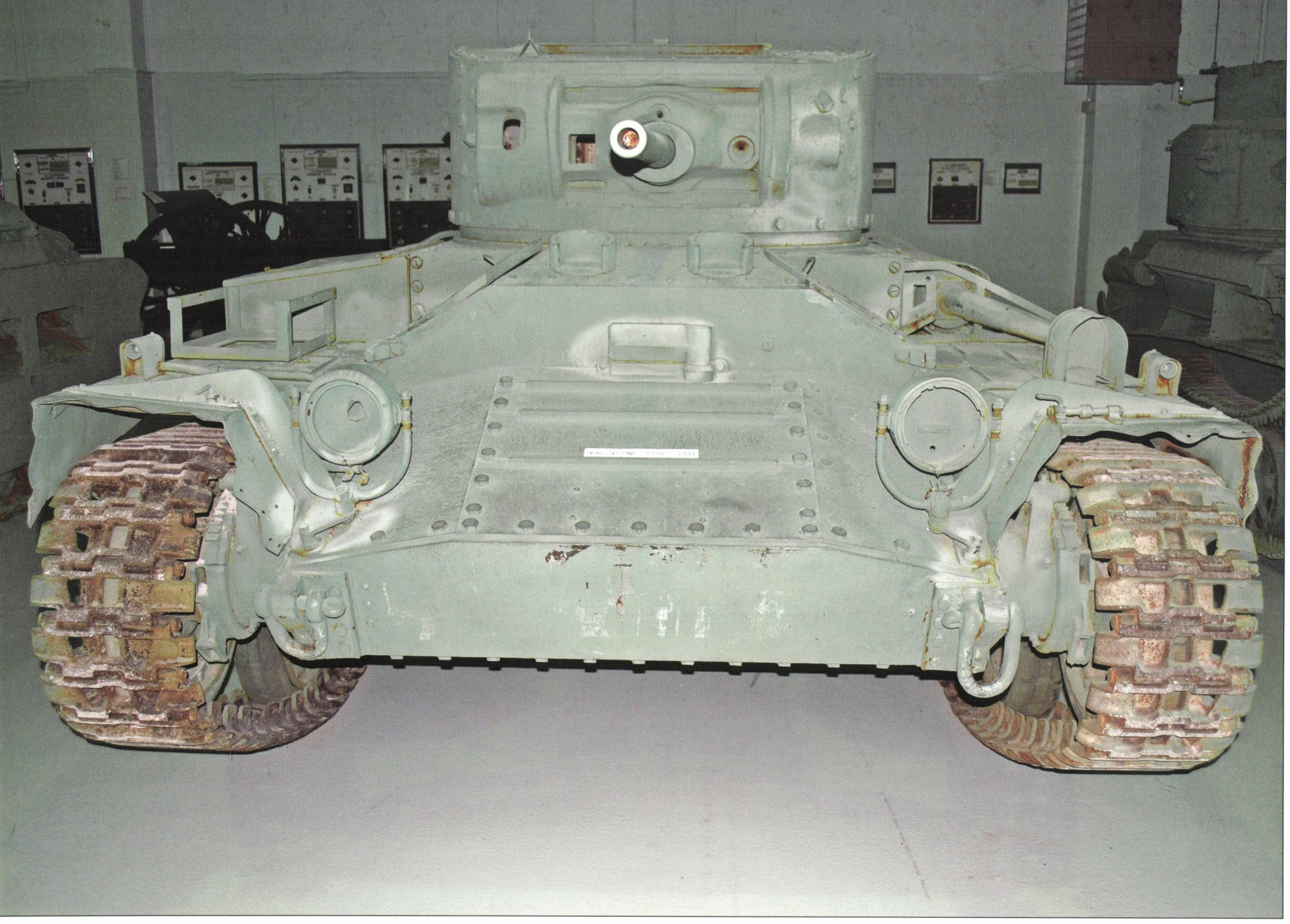
Although the Valentine's manganese-steel tracks usually had little tendency to rust, the tracks on this Valentine Mk. VI are fairly corroded from years of exposure. Tracks could exhibit rust, depending on the manganese content. (Scott Taylor)

These British Valentine Mk. IIs are at a base camp in 1941. The vehicles are apparently painted Khaki Green G3. The fronts of the fenders, or mud flaps, are rubber and black.





The Valentine Mk. VI has the two-man turret of the design used on the British-manufactured Valentine Mks. II and IV. Indeed, with its early bolted front end, this vehicle is quite similar in outward appearance to the Mks. II and IV. (Scott Taylor)



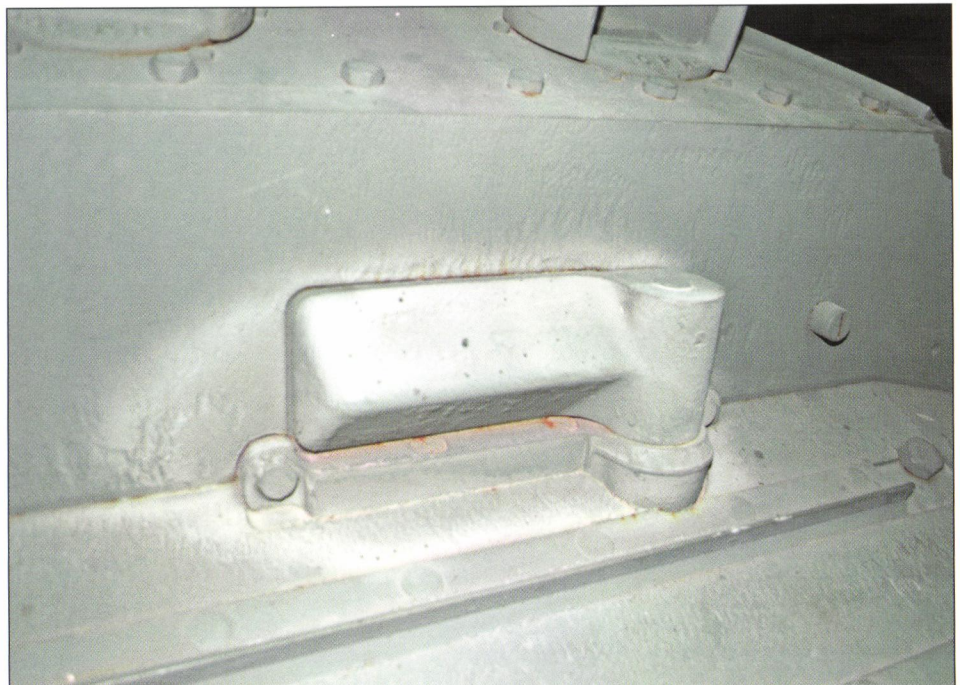
Viewed from the front, the turret has a low, narrow silhouette. Arrayed across the face of the turret from left to right are the aperture for the 2-inch smoke bomb thrower; the square opening for the Besa coaxial machine gun; the 2-pounder main gun; and the circular aperture for the gunner's telescopic sight. (Scott Taylor)

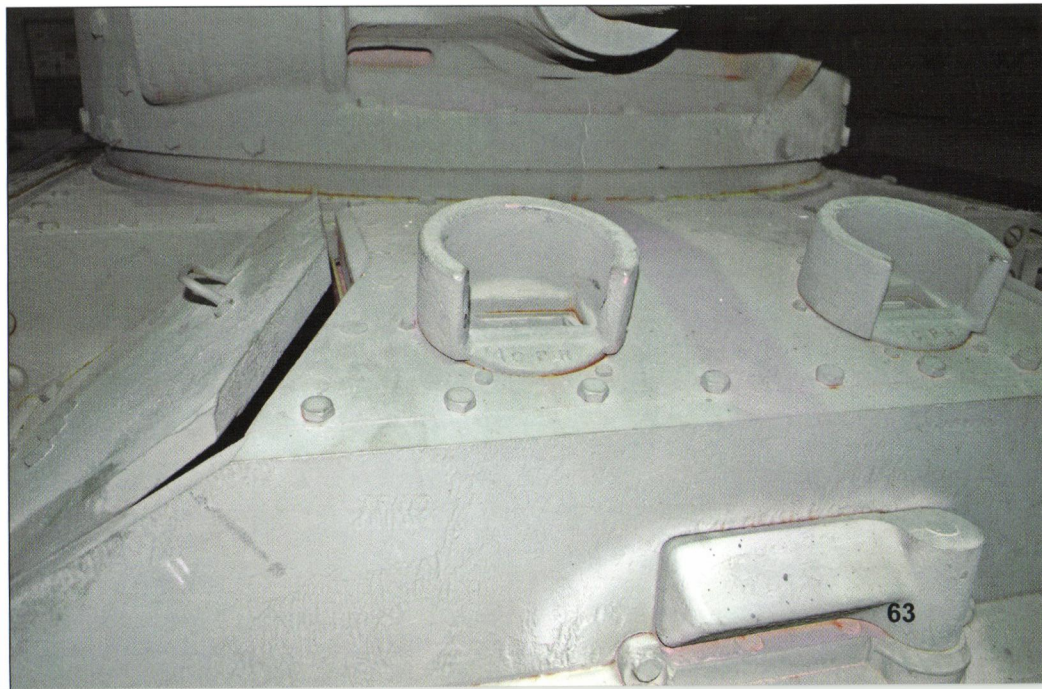
Next to the tow shackle bolted to the front left towing eye is the idler support or bearing. The extension with the expanded rim at the lower front of the support has a rectangular recess that accepts the track-adjusting tool, used for setting the tension of the tracks. (Scott Taylor)

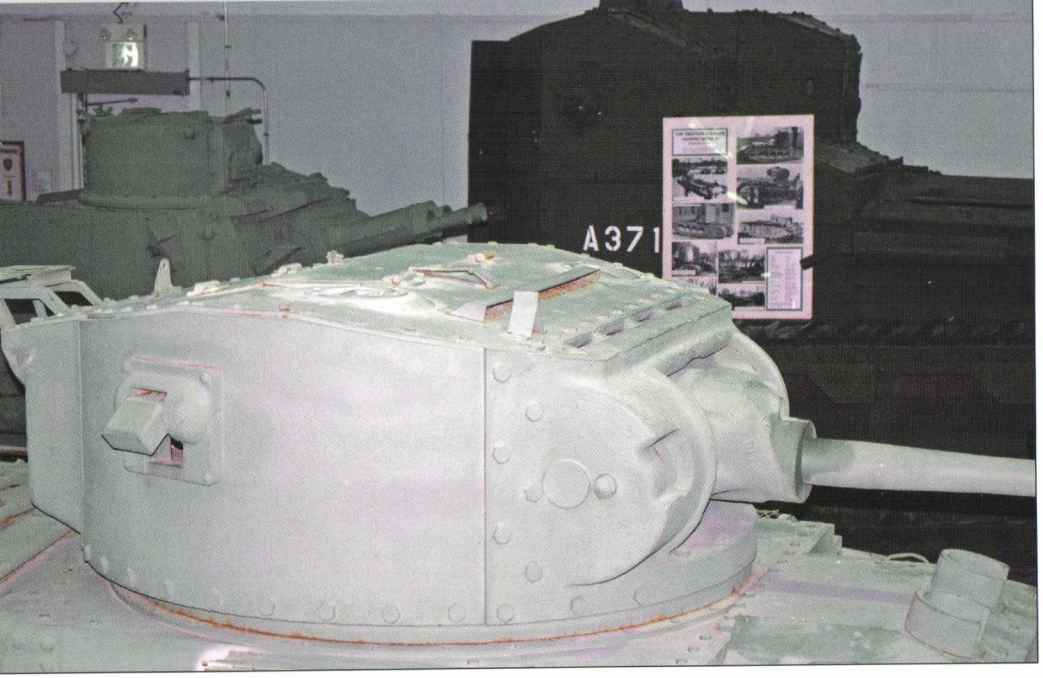
The glacis is joined to the front of the vehicle with hex bolts. On the face of the glacis are three splash guards fabricated from welded-on angle irons. To the rear of the glacis is the closed door of the driver's vision port. (Scott Taylor)

The door of the driver's vision port pivots on a vertical hinge pin on the right of the door in this photo. The driver uses an operating lever inside the driver's compartment to swing the door open. (Scott Taylor)

Atop the roof panel, between the two driver's doors, are two revolving mounts for periscopes. On the edge of the mounts, to the front of the periscope openings, are the casting marks "CPR," referring to the manufacturer, the Canadian Pacific Railway Company. (Scott Taylor)





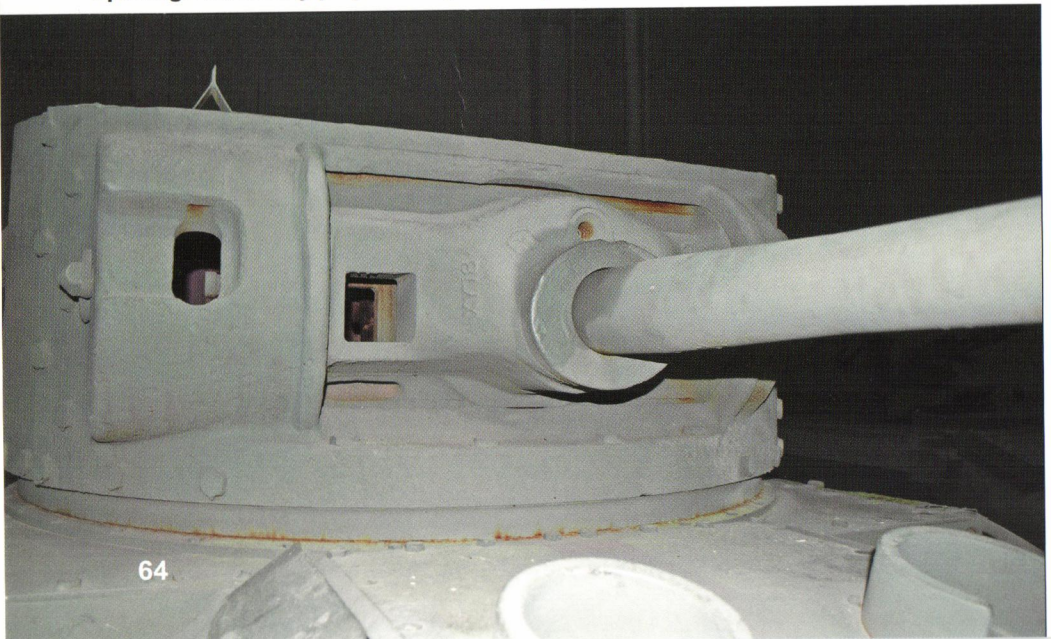


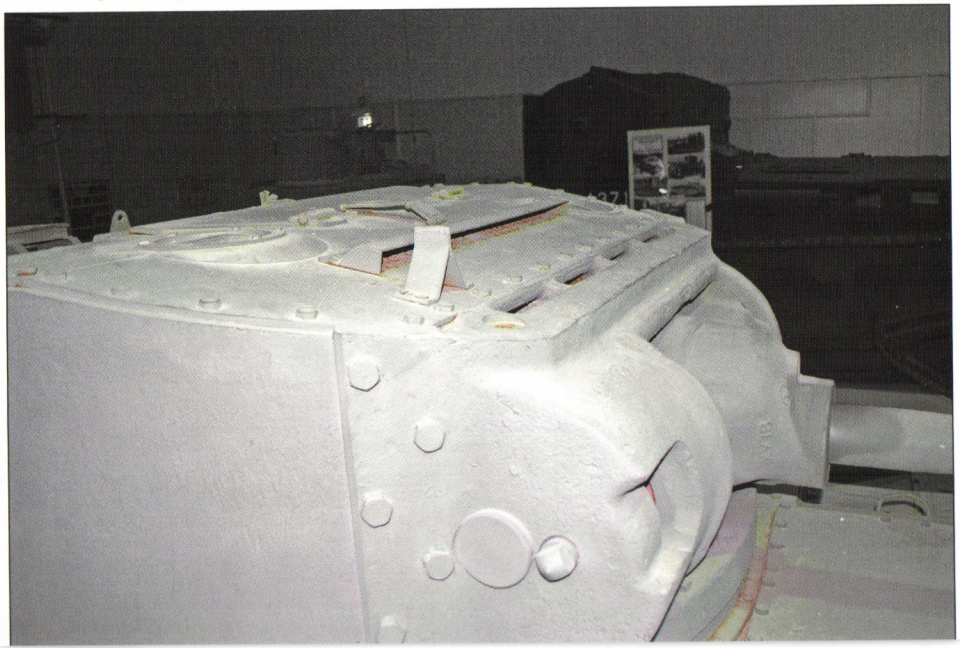
The Valentine Mk. VI has a pistol port on the right side of the turret only. The mantlet is the early, non-extended type. (Scott Taylor)

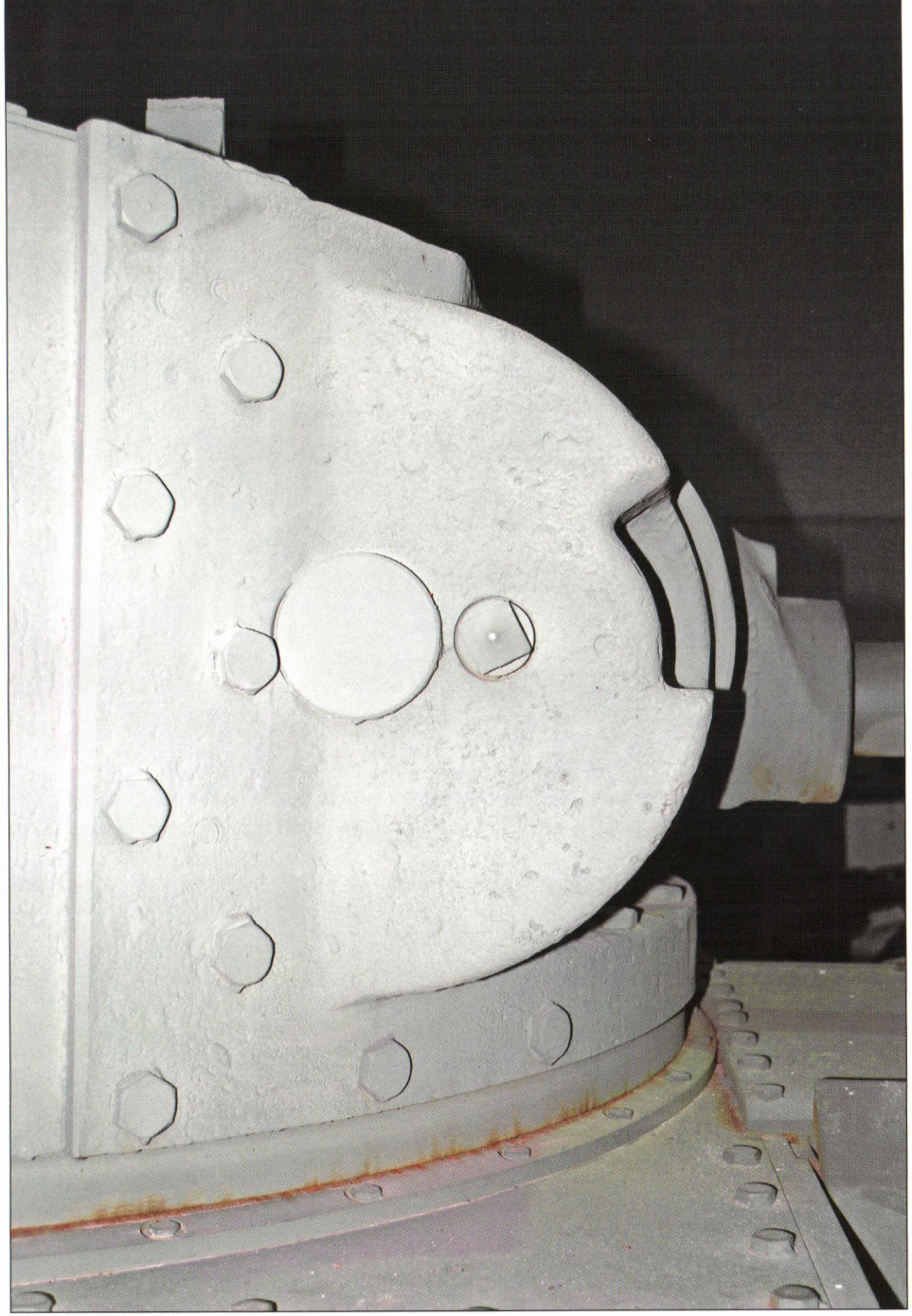
The oblong opening for the 2-inch bomb thrower and the square opening for the coaxial Besa machine gun are to the side of the 2-pounder main gun. A part number is cast vertically on the rotor shield between the coaxial port and the main gun; to the upper right of the number is a foundry mark. The convoluted surfaces of the front of the turret and the mantlet, as well as the several large apertures, offered ample shot traps and openings for enemy projectiles. (Scott Taylor)

The 2-pounder main gun was manufactured by Vickers and was 40mm in caliber. It had an effective range of 1,000 yards and a muzzle velocity of 2,600 feet per second with the armor-piercing-shot round. With its semiautomatic vertical breech block, the gun could theoretically be fired at the rate of 22 rounds per minute. (Scott Taylor)

The four slots near the top front of the turret are for ventilation. The long, narrow sheet metal hood on the roof of the turret is a cover for another ventilator. The inverted Y-shaped fixture atop the turret is a vane sight, which, when viewed through the commander/loader's periscope, enabled him to place the turret roughly onto a target. (Scott Taylor)







Hex bolts attach the front of the turret to the sides and roof of the turret as seen in this profile of the right side of the mantlet. Lacking a splash guard, the turret ring and the base of the turret are highly exposed. (Scott Taylor)

As viewed from a forward angle, the pistol port door is partially open. A casting number and foundry mark (the letter D within an octagon) are on the swell toward the top of the mounting frame. (Scott Taylor)

The edges of the door of the pistol port are beveled. (Scott Taylor)

The pistol port door and frame are viewed from slightly to the rear. (Scott Taylor)

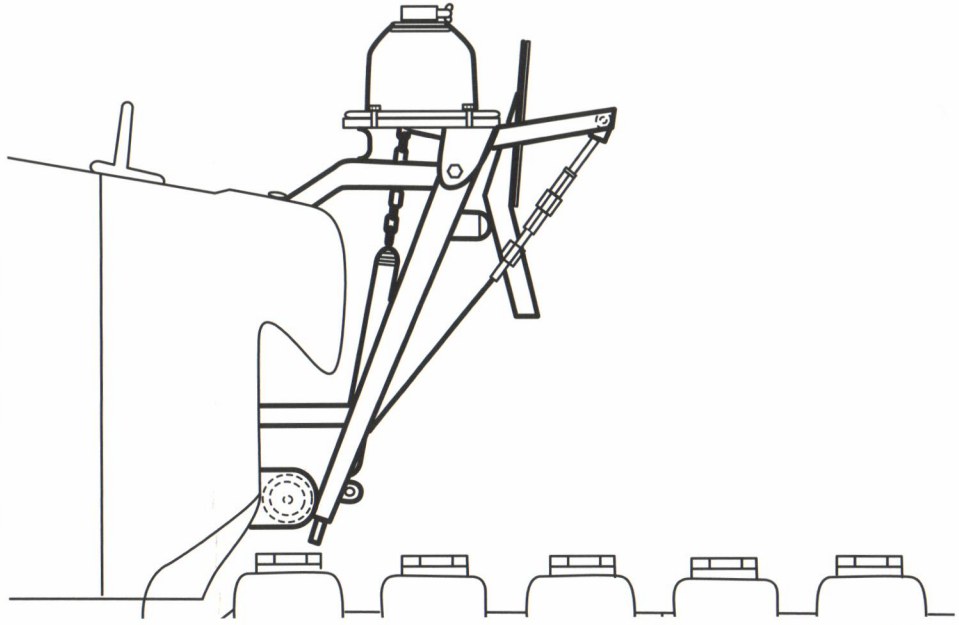
Visible on the roof of the turret is the two-panel entry hatch door. The circular object on the near side of the forward door is the loader's periscope mount. It lacks a semicircular splash guard. Towards the front of the turret is the inverted Y-shaped vane sight, which enabled the commander/loader to place the turret roughly onto a target. (Scott Taylor)

Unlike the right side, no pistol port is found on the left side of the turret. This creates a relatively smooth surface to the pronounced joint, where the turret bustle meets the turret side. Hex head cap screws are used to secure the turret roof plates in place. (Scott Taylor)

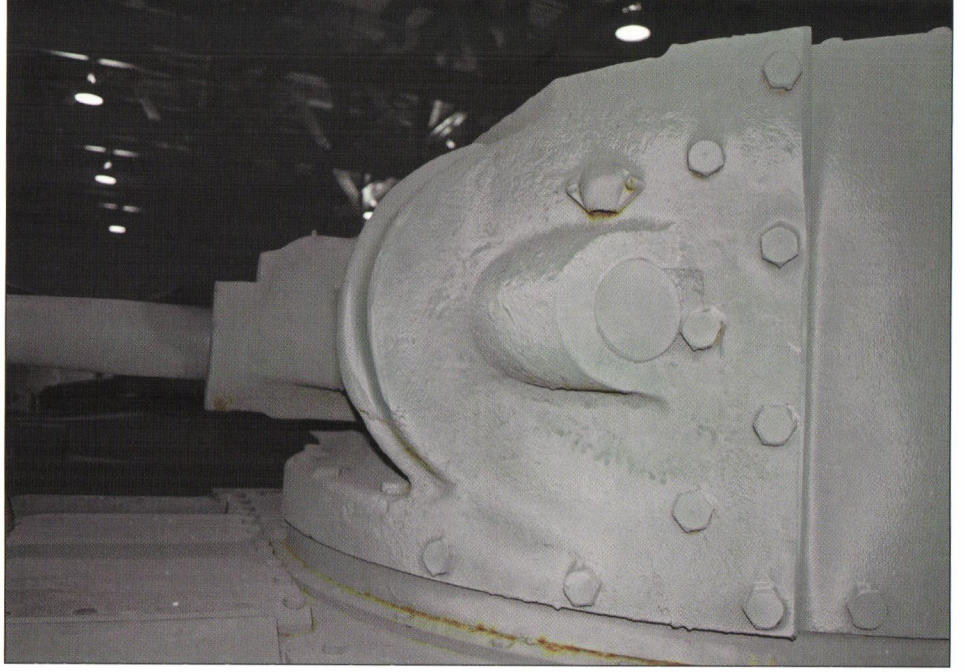
Shown in profile from the right side is the tilting antenna mount for the No. 11 W/T radio set at the center rear of the turret bustle. (Scott Taylor)

The flat mounting plate is horizontal, the position it would be in for a raised antenna. The flap-looking feature on the upper rear of the turret bustle housed a ventilation opening on its underside. (Scott Taylor)

The antenna and its base would have been mounted on the plate with the large, circular hole, and a cable and pulley would be used to lower the antenna to the rear.

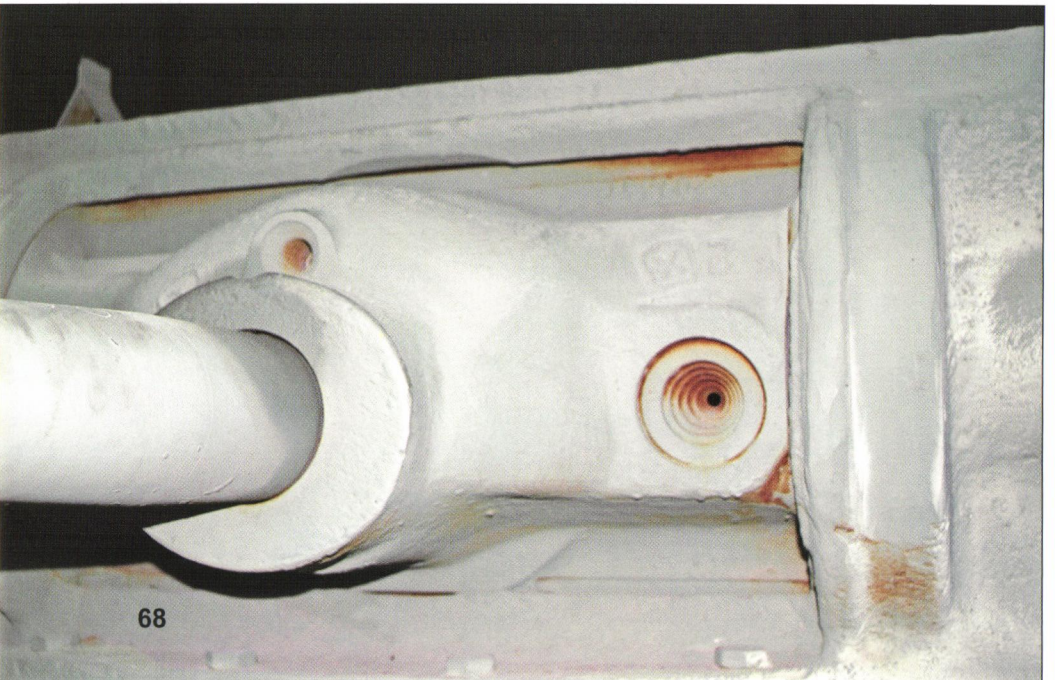


The Valentine Mk. VI had a gunner's periscope mount toward the left front of the turret roof. The front ventilation slots and the sheet metal cover over the parallel ventilation openings to the rear are in view. The vane sight is on the opposite side of the turret roof. (Scott Taylor)



Trunnion covers are incorporated into the sides of the mantlets. The profile of the left side of the mantlet differs significantly from that of the right side of the mantlet, the most prominent difference being the protruding trunnion housing. (Scott Taylor)

The aperture for the gunner's telescopic sight (right) tapers toward the inside with a stepped, concentric design. (Scott Taylor)



Cast into the armor of the rotor shield over the gunner's sight aperture are a part number and foundry logo. Closest to the top of the sight aperture are a large, upside-down number 2 and the letter X within a square. (Scott Taylor)

Mark IX

The Valentine Mk. IX is basically a Valentine Mk. V with a 6-pounder main gun instead of a 2-pounder. It had a redesigned mantlet and gun mount, and the coaxial machine gun was eliminated. It was powered with a GMC Diesel engine. (Simon Thomson)

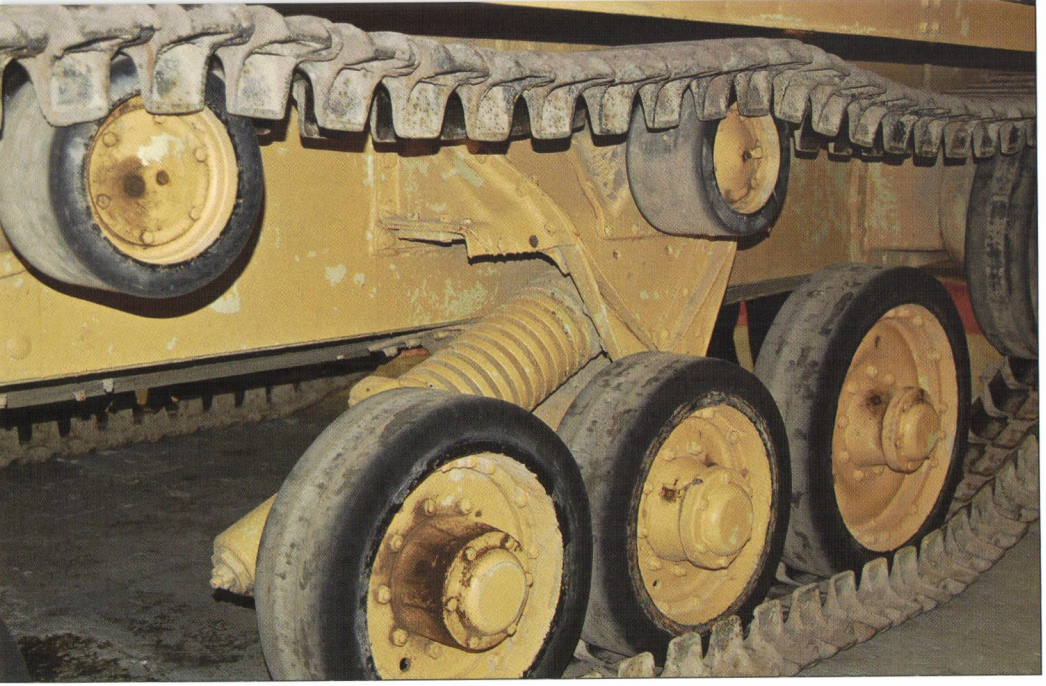
The Mk. IX has a two-man turret, with the commander doubling as the loader. The muffler shroud on this example extends forward to cover the exhaust where it exits the muffler, and there is no extension of the shroud over the exhaust elbow to the rear of the muffler. (Simon Thomson)

The idler and bogie wheels are the smooth-dish type, rather than the spoked type of the earlier Valentine Marks. A small bracket secures the exhaust to the rear of the adjacent fender support. The front left fender lacks the siren inboard of the side lamp. (Andrew Willis)

The fender section above the two rear bogie wheels of the left rear bogie assembly lacks the pronounced upward slope at the rear that was a feature of early Marks of the Valentine. Instead, the rear fender section is stepped upwards. (Andrew Willis)

These manganese-steel tracks show little corrosion for their age but display the characteristic burnishing where the wheels make contact between the guide horns. There are three small, evenly spaced holes on the side of each wheel. (Dennis Trowbridge)

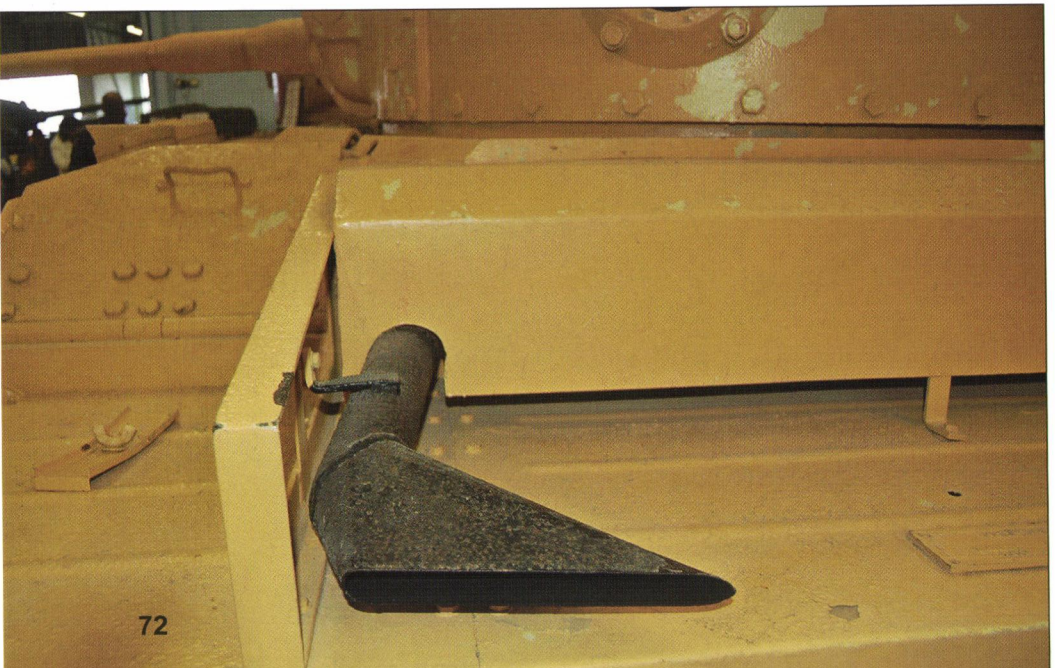
At the top left of this view toward the rear of the left rear bogie assembly is the center track-support roller. The roller is mounted on a support that is bolted to the side of the hull. The tires of the track-support rollers have not been oversprayed; thus, the black rubber of the tires is visible. (Dennis Trowbridge)



Lubricant staining is usually present around the grease fittings and hubcaps of the wheels, as seen in this view of the rear bogie assembly of the Valentine Mk. IX. (Dennis Trowbridge)

The sheet-metal exhaust shroud has an angled profile, rather than the curved shape of the exhaust shroud on the Valentine Mk. III. To reduce glare, covers have been installed over the driver's periscope mounts. (Andrew Willis)

The design of this exhaust is noticeably different from that on the early Valentine Marks. This exhaust has a narrower outlet than earlier models had, and it points toward the rear rather than to the front of the vehicle. (Dennis Trowbridge)

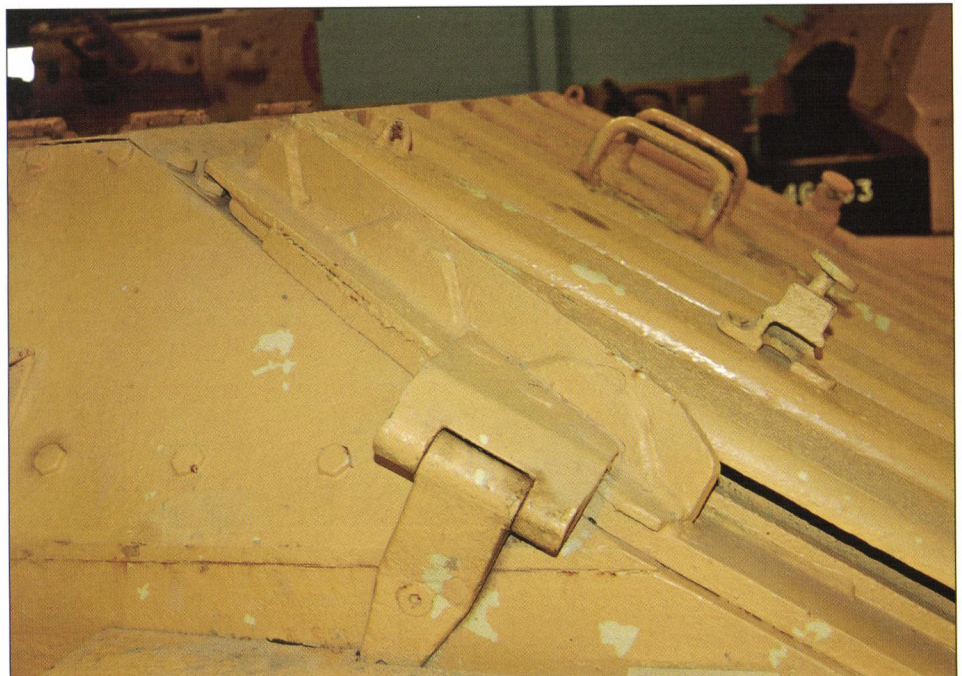


The exhaust elbow exits the engine compartment through a cutout in the front left engine compartment door. At the top of the photo, below and behind the rear of the turret bustle, are the engine compartment door hinges. (Dennis Trowbridge)

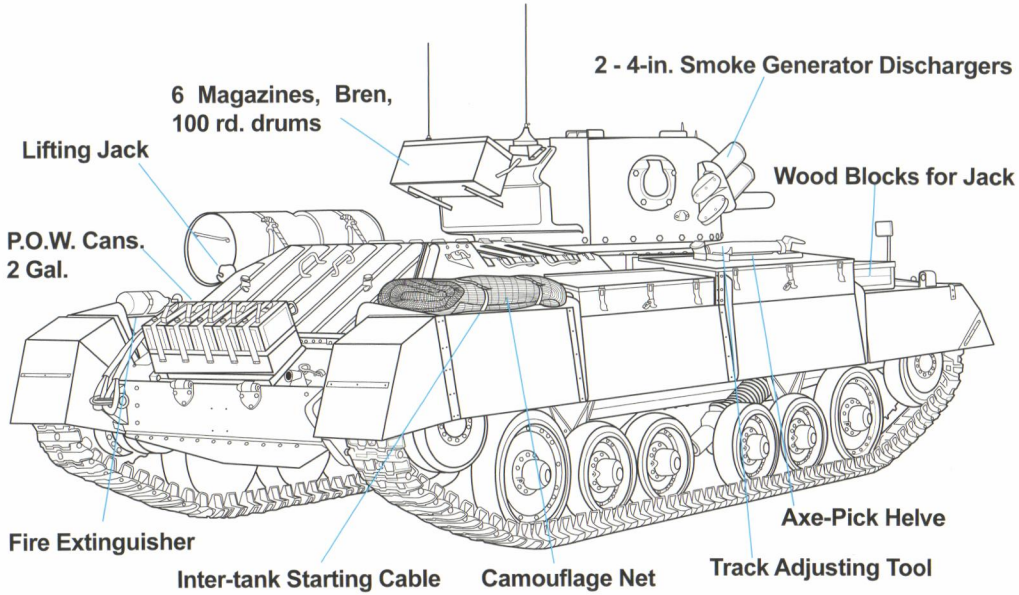
Fixed plates have here replaced the bottom-hinged lower engine compartment doors seen on earlier Valentine Marks. A long fender support below the forward lifting handle of the engine compartment doors has replaced the small, rectangular fender support used on earlier Marks. (Andrew Willis)

The cutouts on the upper edge of the engine compartment doors allow water to run off from the channels between the louvers on the tops of the doors. There is a ventilation opening on the underside of the protrusion at the top of the turret bustle. (Dennis Trowbridge)

The upper part of the left radiator door, including the upper or front hinge, is viewed from the left rear of the tank. Between the two pairs of lifting handles on the radiator doors are the fixtures that engage the hold-open struts for the doors. (Dennis Trowbridge)



This drawing shows the prescribed location for stowing equipment on the rear and right side of the Valentine IX. It was important to store essential items in fixed locations so they could be retrieved quickly.

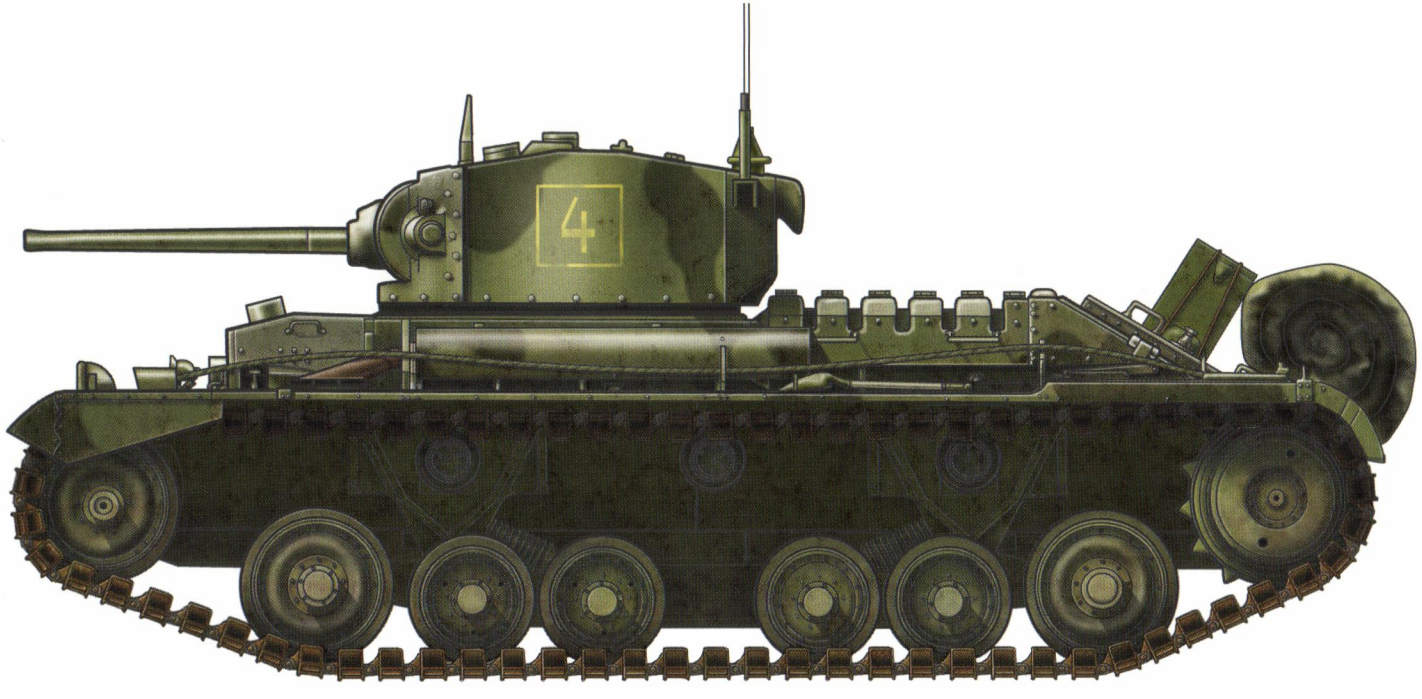


The gunner's head poking up through the hatch of this Valentine Mk. IX gives an idea of the scale of the vehicle. Five liquid containers are strapped to the POW (petrol, oil, water) rack on the radiator door at the rear of the tank. (Simon Thomson)

The joint between the radiator doors is evident at the center. The construction of the doors incorporates raised louver covers welded to frames. Two grab handles on each door facilitate opening them. (Dennis Trowbridge)

A jettisonable auxiliary fuel tank sometimes was carried on the left fender of Valentines. The M4A2 Sherman medium tank with HVSS suspension in the background gives some perspective of the relatively low profile of the Valentine. (John Blackman)

This British Valentine wears a two-tone camouflage scheme of Khaki Green G3 and Very Dark Brown SCC1A, with the colors cleanly demarcated. The vehicles wear varied tactical signs, squares and triangles, on the sides of the turrets, all in yellow.



The radiator doors are open on this Valentine Mk. IX, showing the two radiator panels. The radiators are hinged on the outer sides and can be lifted up, allowing access to the interior of the vehicle. Below and to the rear of the radiators, the access door for the final-drive compartment is open. (Simon Thomson)

A rear view of the Mk. IX reveals mismatched rear fender supports, the one on the left being the usual type with the downward-angled top rail, but the one at the right has a top rail parallel with the fender surface. Five liquid containers are strapped to a rack on the final-drive access door. (Andrew Willis)

The front storage box on the right fender has the sloped lid of earlier marks of the Valentine, while the rear box has a nonsloped lid that is parallel to the surface of the fender. Two antenna mounts are visible; one extending from the left of the turret bustle, and one on top of the right side of the bustle. (Andrew Willis)

The prescribed contents of the rear storage box were three blankets, three rations boxes, biscuit tins, and ground-air recognition strips and discs. (Andrew Willis)

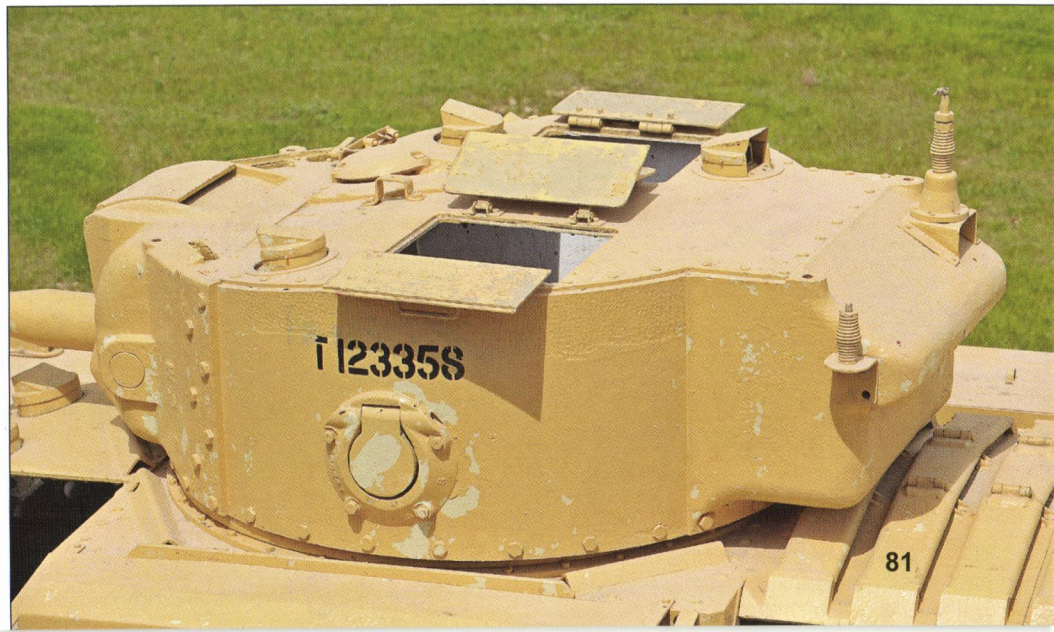
The Valentine Mk. IX eliminated the internally mounted 2-inch bomb thrower. Instead, two 4-inch smoke bomb throwers were mounted at an angle on the right side of the turret. The headlights have no blackout covers. (Andrew Willis)

The door for the driver's forward vision port is swung open. The three glacis splash guards in front of the port would act to keep projectiles that hit the glacis from ricocheting into the port or the surrounding armor plate. (Dennis Trowbridge)

The exterior details of the driver's compartment, including the right door and periscope mounts, as well as features of the 6-pounder mantlet and mount, are visible. Unlike earlier Valentine Marks, the Mk. IX has no ports for a 2-inch bomb thrower or a coaxial machine gun. (Dennis Trowbridge)

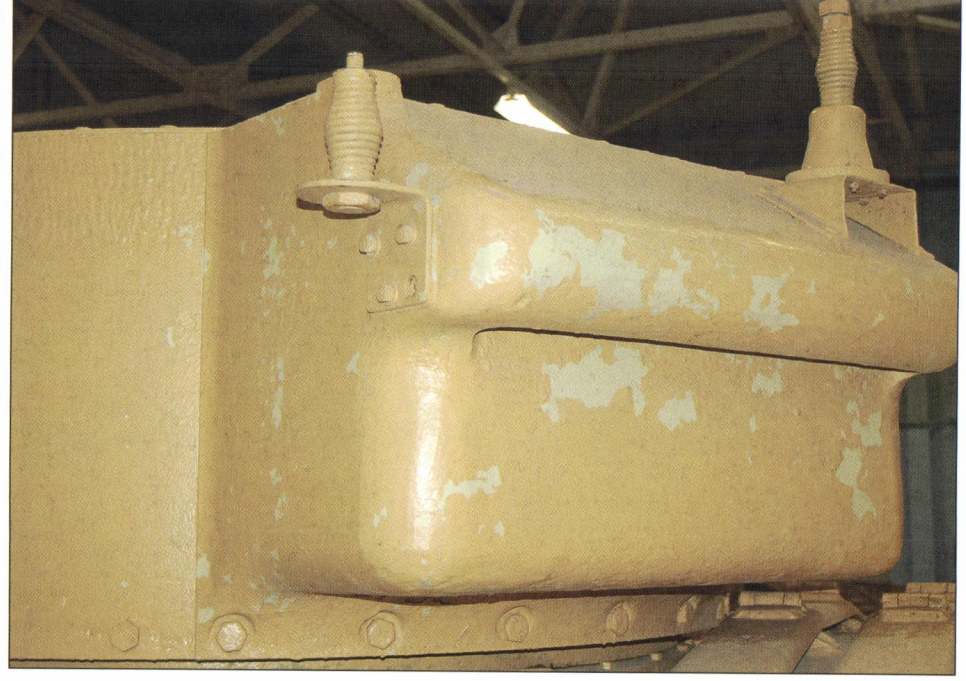
The front section of the turret is bolted to the side of the turret as seen here. The pistol port doors on the Mk. IX are flat on the outside with a beveled, circular frame. Toward the lower left of the photo, the left driver's door is open. The solid-metal muffler guard with a beveled upper edge and the exhaust pipe also are shown to good effect. (Andrew Willis)

The Mk. IX has separate hatches, each with two side-hinged doors, for the gunner and loader/commander. Mounted on the roof are three periscopes, and a round ventilator cover is visible to the right of the centerline of the turret roof in front of the commander's hatch. (Andrew Willis)



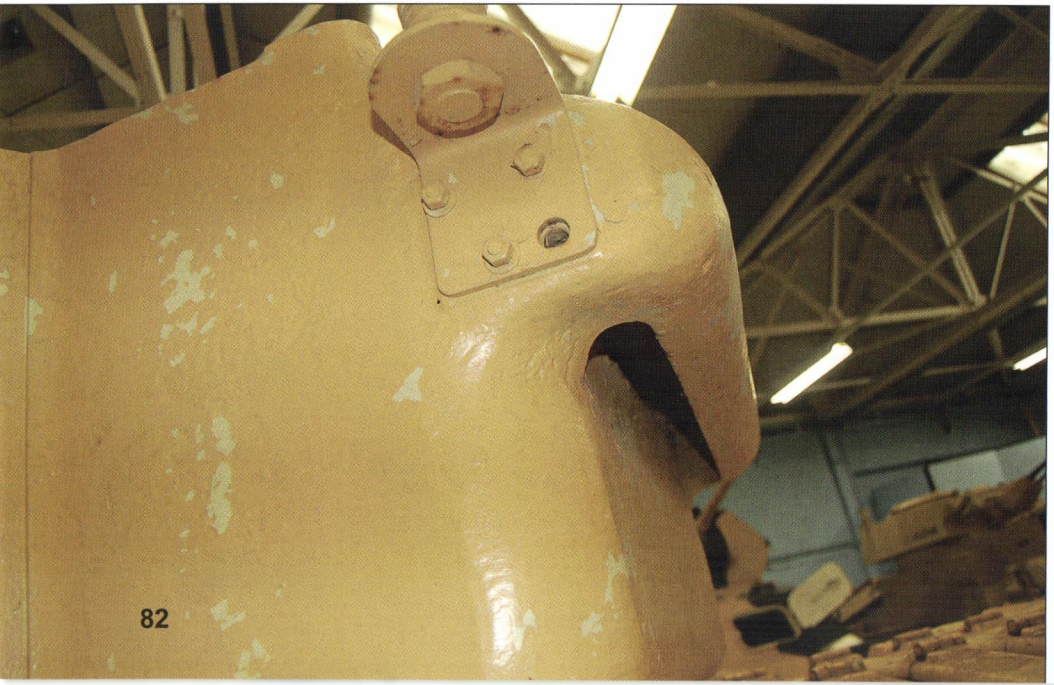
There are casting numbers on the frame of the pistol port. (Dennis Trowbridge)

The ventilation opening on the turret bustle is visible from underneath. This vent helped with air circulation around the wireless transmitter set inside the bustle, which, with its vacuum tubes, could get quite hot. The antenna bracket is simply a bent piece of steel attached to the turret with three bolts. A large hex nut secures the bottom of the antenna mount to the underside of the bracket. (Dennis Trowbridge)

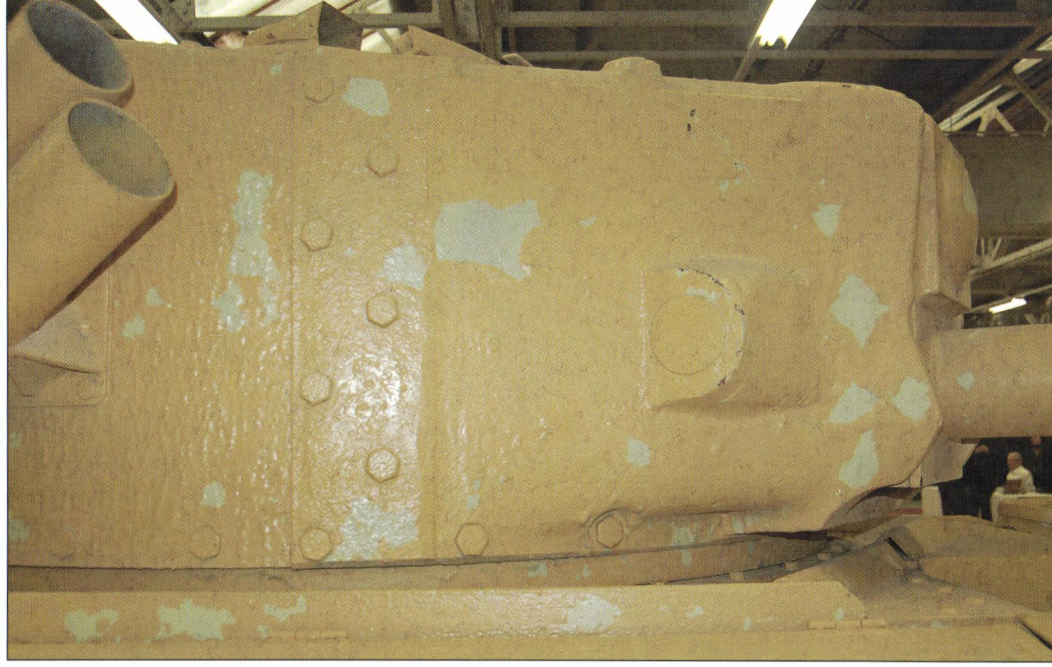


The long ventilation opening on the underside of the protrusion at the top of the turret bustle is in view. The secondary antenna mount is to the left of center, on an L-shaped bracket bolted to the bustle. (Dennis Trowbridge)

The two external smoke bomb throwers are single-shot devices. Unlike the breechloading 2-inch bomb throwers, these were muzzle-loading devices. They could be fired manually from outside the turret or electrically from inside. (Dennis Trowbridge)



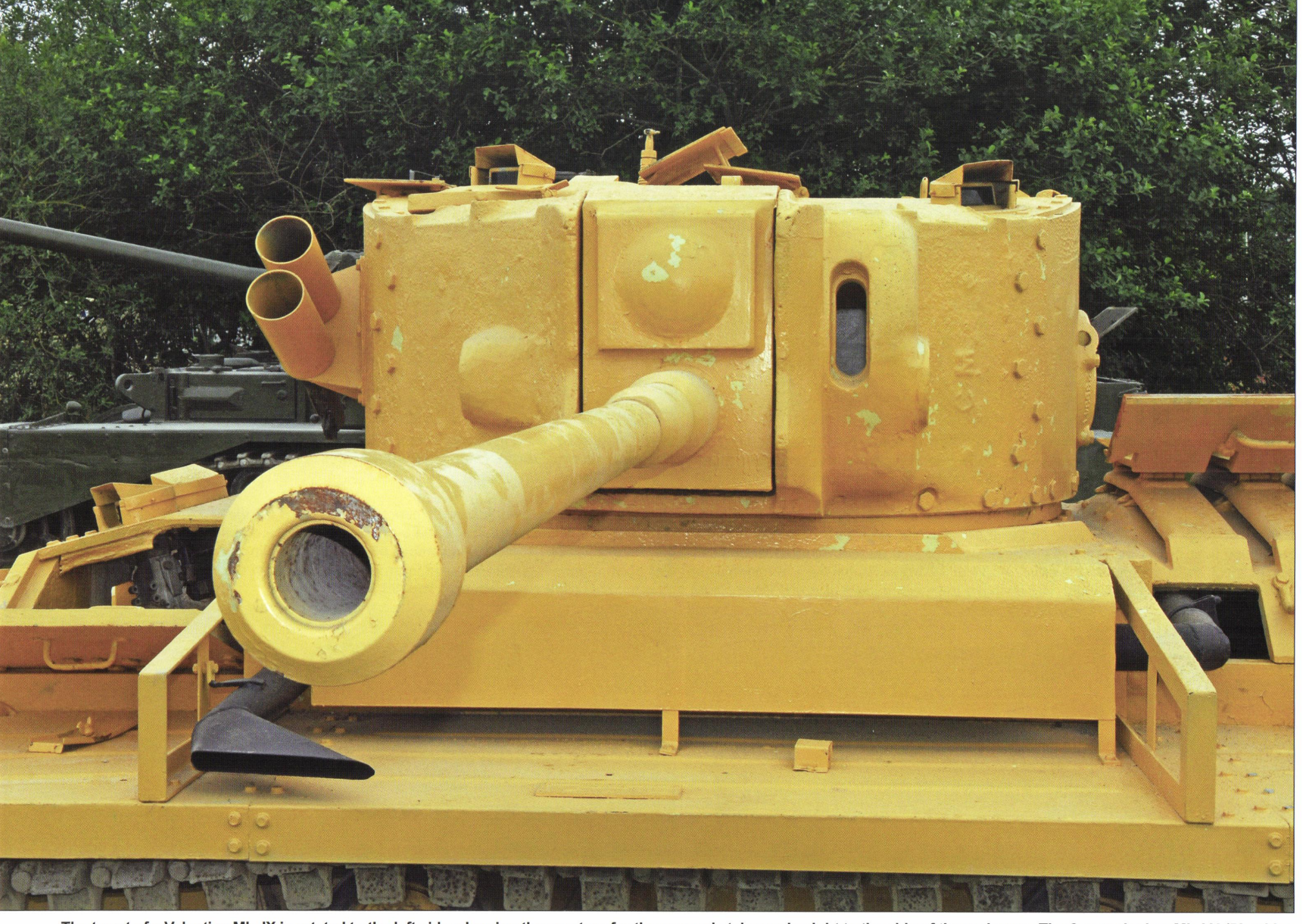
The black devices to the rear of the smoke bomb thrower tubes are the firing units. Each has a bolt that is slid back to insert a cartridge into a chamber; the cartridge propels the smoke bomb. Manual triggers are on the undersides of the firing units. (Dennis Trowbridge)



Seven staggered hex bolts secure the vertical, overlapping joint between the front and side sections of the turret. There is a trunnion swell on the side of the mantlet to the right of center. (Dennis Trowbridge)

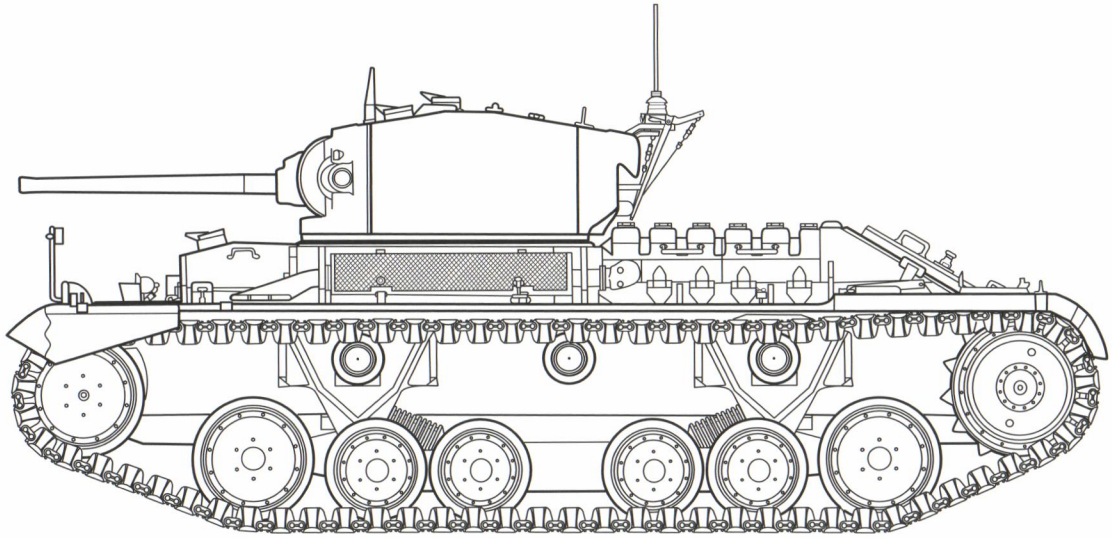
The upper edge of the right side of the mantlet is beveled approximately 45°. The protrusion near the center point of the beveling is tapped on the top to accept a lifting eye, of which there are four on the upper edges of the turret. Above the protrusion is the commander's pivoting vane sight, shown in the lowered position. (Dennis Trowbridge)

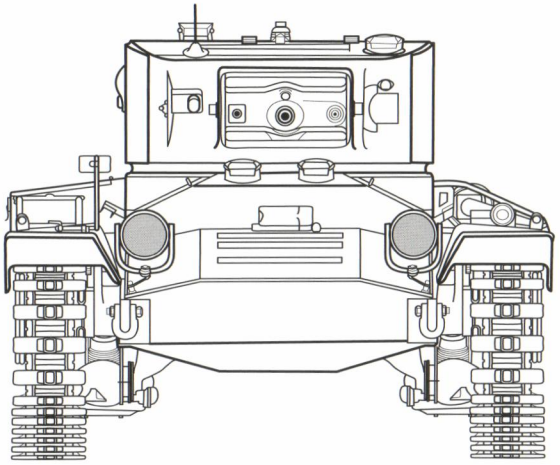
The bomb throwers, trunnion swell (center), and mantlet are viewed from the front. The plate with the round swell above the 6-pounder barrel accommodated the front of the gun recoil cylinder. Numerous swatches of paint were peeling off this Valentine when it was photographed, possibly due to improper preparation of the previous paint coat or incompatible paint types. (Dennis Trowbridge)

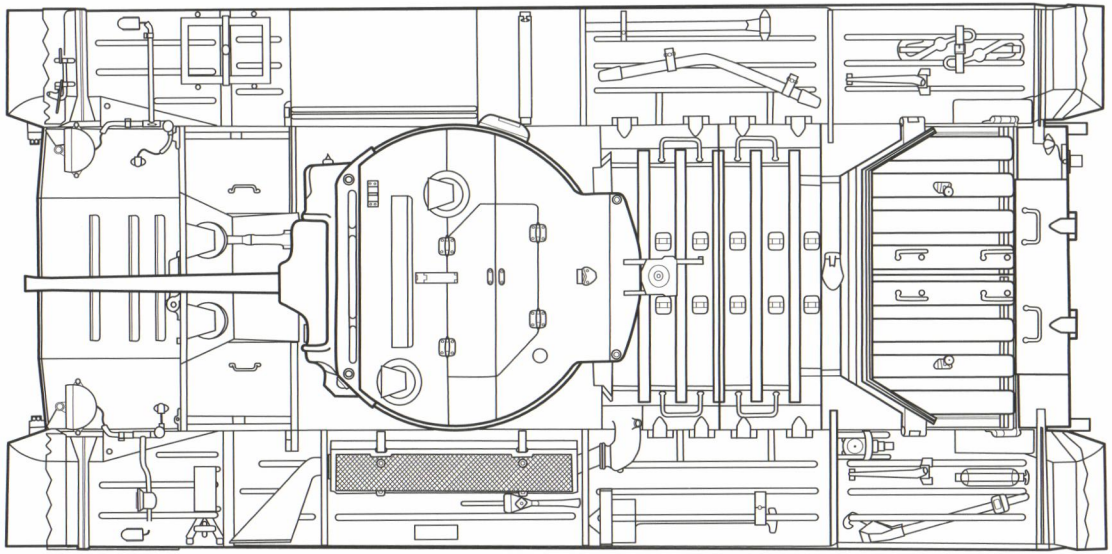


The turret of a Valentine Mk. IX is rotated to the left side, showing the aperture for the gunner's telescopic sight to the side of the main gun. The 6-pounder is a Mk. V L/50, with a counterweight at the muzzle end. (Simon Thomson)

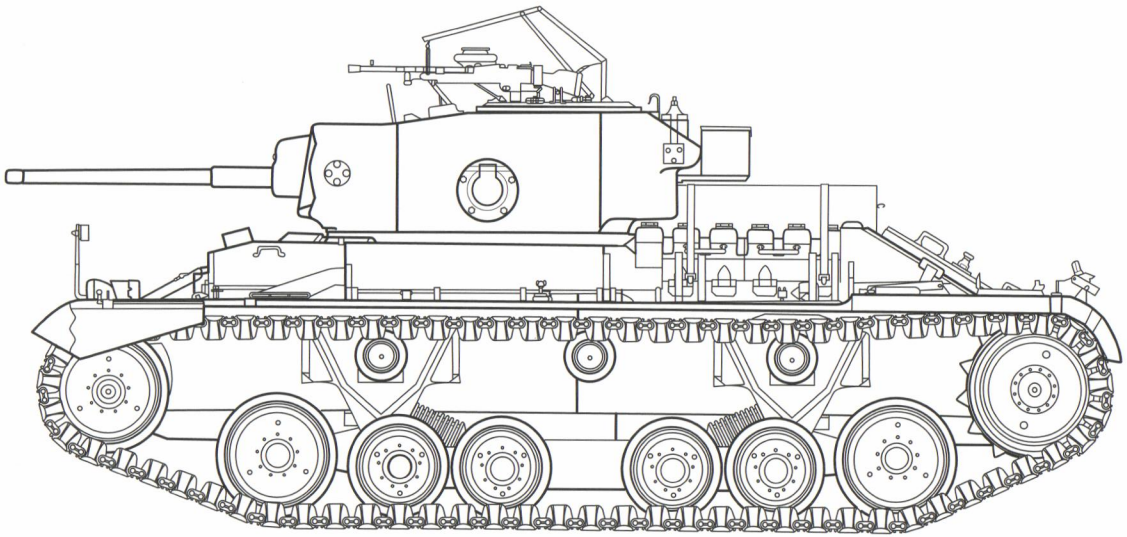
Valentine MK II

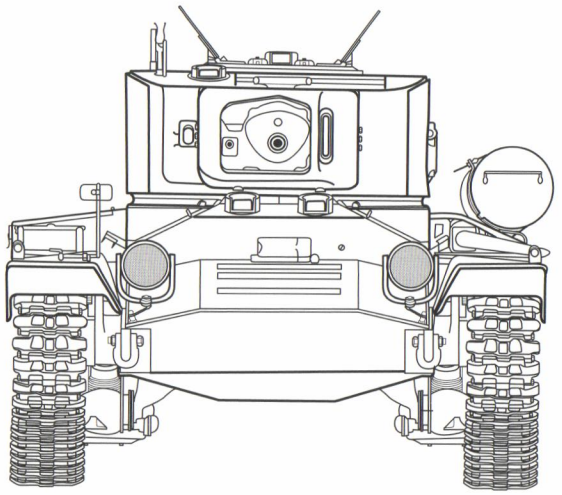


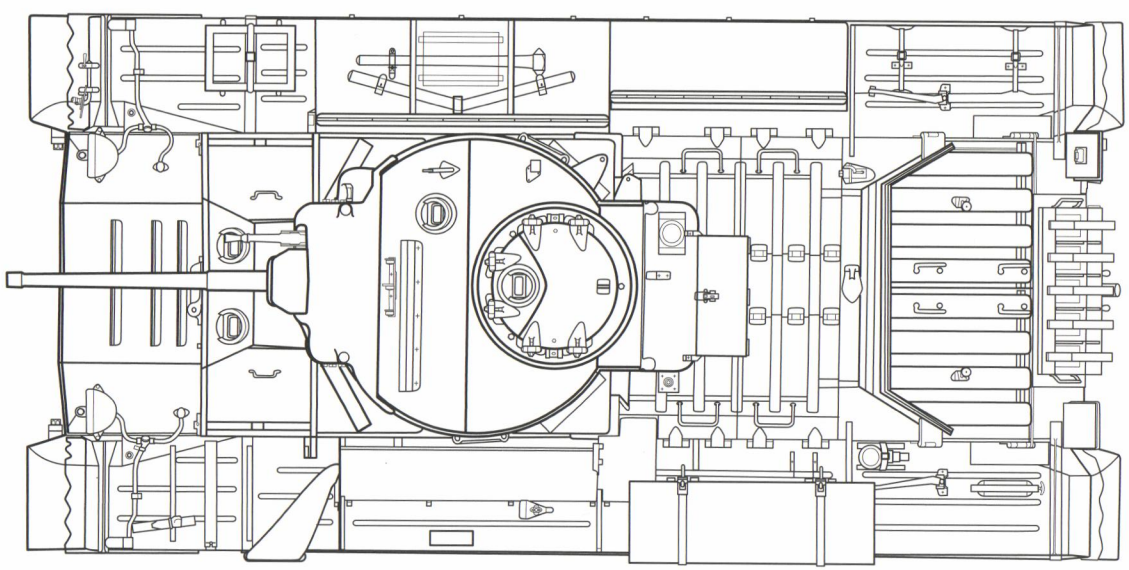




Valentine MK III







Valentine Duplex Drive

A duplex-drive (DD) version of the Valentine tank went into production in March 1943, with some 625 examples being completed. Each received a collapsible canvas flotation screen and a marine propeller linked to a power takeoff on the engine. Valentine DDs were mainly employed in training crews and developing techniques for beach assaults. (John Blackman)

To raise the flotation screen before entering the water, compressed air is directed into tubes arranged around the screen. The inflated tubes raise the screen enough to allow crewmen to attach metal struts from the top of the hull to the upper rim of the screen. The dip at the center of the top of the screen was reportedly a characteristic of early Valentine DDs. (John Blackman)

With the flotation screen collapsed, the numerous inflatable lifting tubes and metal struts lie folded around the screen. Valentines equipped with 2-pounder, 6-pounder, and 75mm main guns were converted to DD. This restored example is a Mk. VIII, with 6-pounder gun, no coaxial machine gun, and dual turret hatches with two-panel doors. The sloping rear deck of the vehicle made it necessary to add a transom to the rear of the hull to ensure its waterproof integrity. (John Blackman)

The marine propeller can be tilted up and out of the way when the vehicle is operating on land. The angle irons on either side of the propeller support the transom assembly. For waterproofing, the canvas of the screen was impregnated with rubber. Typically, the canvas had pinkish and grayish overtones, and took on a darker hue when wet. (John Blackman)

The bow assembly of welded construction added to front of the Valentine DDs is notched to allow clearance for the towing eyes. Lifting eyes are positioned on both sides of the vertical plate at the front of the driver's compartment. A single service headlight is mounted on a strut on the glacis. (John Blackman)

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